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EPA Superfund
Record of Decision:

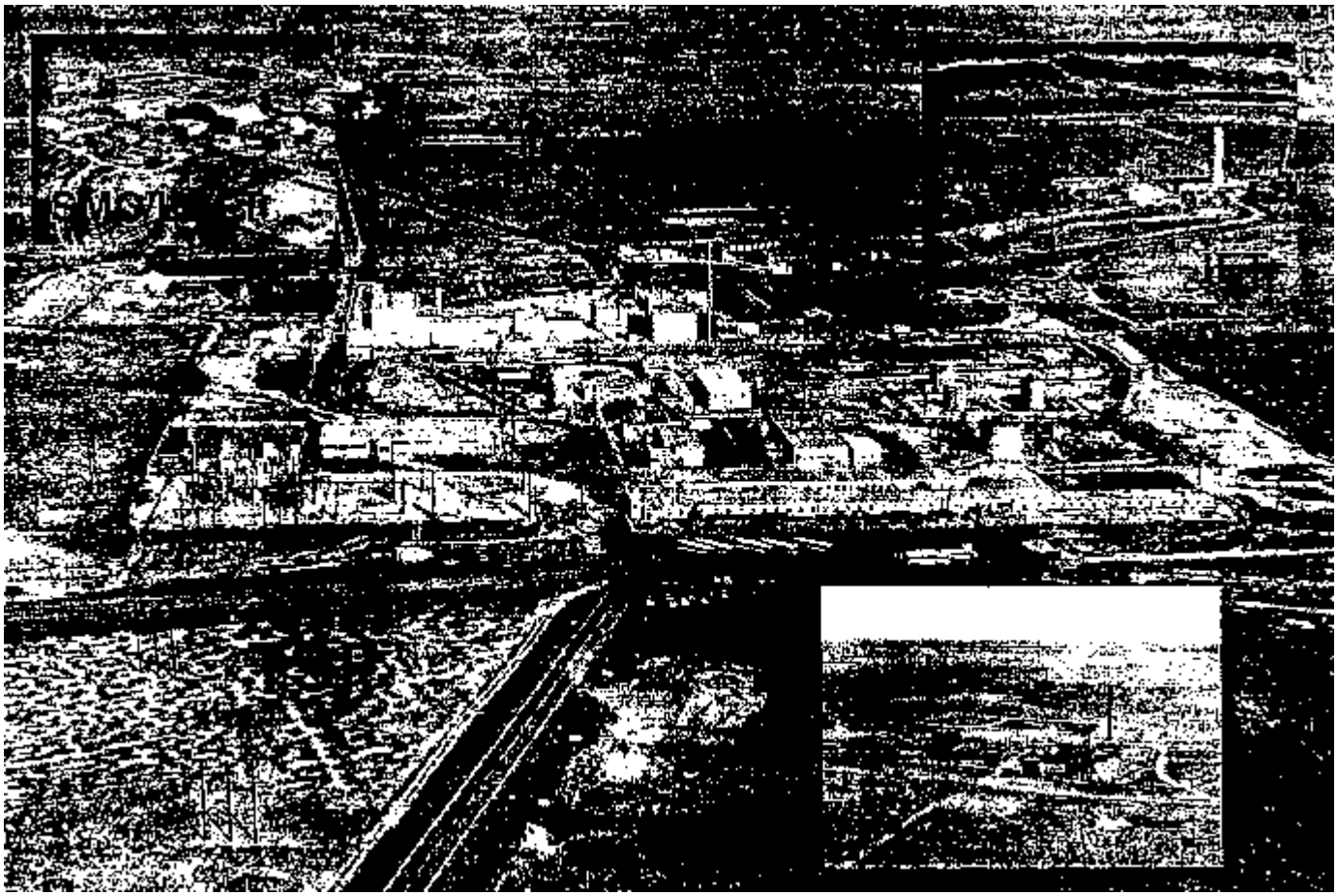
IDAHO NATIONAL ENGINEERING LABORATORY (USDOE)
EPA ID: ID4890008952
OU 03
IDAHO FALLS, ID
11/22/1999

IDAHO DEPARTMENT OF HEALTH AND WELFARE

DIVISION OF ENVIRONMENTAL QUALITY

Final Record of Decision for

Test Area North



Operable Unit 1-10
Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho

DOE/ID-10682
Revision 0

Final Record of Decision for Test Area North

October 1999

Operable Unit 1-10
Idaho National Engineering and Environment Laboratory
Idaho Falls, Idaho

PART I - DECLARATION

Site Name and Location

Test Area North, Waste Area Group 1
Operable Unit 1-10
Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho

Statement of Basis and Purpose

The Test Area North (TAN) Waste Area Group (WAG) 1 is one of the 10 Idaho National Engineering and Environmental Laboratory (INEEL) WAGs identified in the Federal Facility Agreement and Consent Order (FFA/CO) by the U.S. Environmental Protection Agency (EPA) Region 10, the Idaho Department of Health and Welfare (IDHW) Division of Environmental Quality, and the U.S. Department of Energy Idaho Operations Office (DOE-ID), herein after referred to as the Agencies. Operable Unit (OU) 1-10 is listed as the WAG 1 Comprehensive Remedial Investigation (RI)/Feasibility Study (FS) in the FFA/CO. The RI/FS task was to assess the investigations previously conducted for WAG 1, thoroughly investigate the sites not previously evaluated, and determine the overall risk posed by the WAG. The RI/FS results and the proposed remedial actions were summarized in a Proposed Plan, which was issued for public review.

This is the Final Record of Decision (ROD) for the sites that were investigated under OU 1-10, and provides an institutional control evaluation for all sites at WAG 1, including the OU 1-07B ROD "No Action" sites, where an unacceptable risk for unrestricted land use remains. This ROD presents the selected remedial actions for eight sites at TAN that may present an imminent and substantial endangerment to human health and the environment. One additional site that may require remedial action has been selected for a treatability study under WAG 10 to determine specific uptake of mercury by plants, and will be remediated, as necessary, under WAG 1 in the future. The remedial actions were selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1986, as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This ROD is based on the information contained in the INEEL Administrative Record, and is designed to satisfy the requirements of the FFA/CO.

The possibility exists that contaminated environmental media not identified by the INEEL FFA/CO or in this comprehensive investigation will be discovered in the future as a result of routine operations, maintenance activities, decontamination and dismantlement (D&D) activities, and review of previous D&D actions at TAN. New sites will be addressed using the process for new site inclusion as defined in the FFA/CO and will be assessed and remediated pursuant to the process agreed upon by the Agencies at the time of the new site identification. Where appropriate, the remedial action objectives (RAOs) and final remediation goals (FRGs) identified in this ROD will be used to complete potential cleanup activities.

The DOE-ID is the lead agency for this decision. The EPA and the IDHW participated in the evaluation of the final action alternatives. The EPA and IDHW both concur with the selection of the preferred remedy for the eight TAN sites of concern, the selection of the ninth for the treatability study, and the "No Action" and "No Further Action" decision for the remaining sites.

Assessment of the Site

This ROD describes remedial actions for eight of the 94 identified release sites within TAN that may present an imminent and substantial endangerment to human health and the environment. The eight sites include:

1. Intermediate-Level (Radioactive) Waste Disposal System (Site TSF-09), referred to as the V-Tanks.

2. Contaminated Tank Southeast of Tank V-3 (Site TSF- 18), referred to as the V-Tanks.

3. PM-2A Tanks Contents and Contaminated Soil (Site TSF-26), referred to as the PM-2A Tanks.

4. TAN/Technical Support Facility (TSF)-1 (Soil Area) (Site TSF-06, Area B), referred to as the Soil Contamination Area South of the Turntable.

5. TAN Disposal Pond (Site TSF-07), referred to as the Disposal Pond.

6. TSF Burn Pit (Site TSF-03).

7. Water Reactor Research Test Facility (WRRTF) Burn Pit (Site WRRTF-01).

8. Oils and Diesel Fuel Leak (Site WRRTF-13), referred to as the Fuel Leak.

The remedial actions selected in this ROD are designed to reduce the potential threats to human health and the environment to acceptable levels. The Mercury Spill Area (TSF-08) was selected for a treatability study under WAG 10, and will be remediated, as necessary, under WAG 1 in the future. The TSF Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) are being remediated under a separate ROD. The remaining 83 sites have been identified as being "No Action" sites where the land use is unrestricted or "No Further Action" sites where institutional controls are required to restrict land use in the future. These sites include underground storage tanks, disposal ponds, burn/disposal pits, septic systems, and miscellaneous other releases.

Description of the Selected Remedies

V-Tanks (TSF-09 and TSF-18)

For the V-Tanks, the selected remedy is Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal, which will address the principal threat posed by the V-Tank contents. The major components of the selected remedy for the V-Tanks include:

- Excavating contaminated soil

- Disposing the contaminated soil at an acceptable soil repository

- Sampling tank contents

- Removing tank contents and placing the contents into U.S. Department of Transportation (DOT) approved containers
- Transportation of the tank contents and other investigation-derived waste to an approved off-Site treatment facility
- Treatment of tank contents and investigation-derived waste at an approved Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act, and mixed waste treatment facility
- Disposing of treated tank contents and investigation-derived waste at the INEEL CERCLA Disposal Facility, other acceptable facility, or the Waste Isolation Pilot Plant (WIPP)
- Decontamination of the tanks and removing the tanks for disposal
- Post-remediation soil sampling at the bottom of the excavation to verify FRGs are met and analyze for additional contaminants in the V-Tank content waste to perform a risk analysis in support of an institutional control determination at this site
- Filling the excavated area with clean soil, then contouring and grading to surrounding soil
- Institutional controls consisting of signs, access control, and land-use restrictions may be established and maintained, depending on the results of post-remediation sampling.

The selected remedy addresses the risks posed by the V-Tanks by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed. A review of the institutional controls, if required as part of the remedy, will be conducted no less than every 5 years.

PM-2A Tanks (TSF-26)

For the PM-2A Tanks, the selected remedy is Soil Excavation, Tank Content Vacuum Removal, Treatment, and Disposal that will address the low-level threat posed by the waste at this site. The major components of the selected remedy for the PM-2A Tanks include:

- Sampling of the surface soils for additional contaminants identified in the PM-2A Tanks to support a no-longer-contained-in determination and hazardous waste determination
- Excavating contaminated soil
- Disposing the contaminated soil at an acceptable soil repository
- Sampling tank contents
- Removing tank contents using commercial vacuum excavation technology
- Verification of the waste form not requiring treatment before disposal (and treating tank contents to meet waste acceptance criteria, if necessary)

- Disposing the tank contents and investigation-derived waste at an acceptable repository (or other approved facility, if necessary)
- Decontaminating the tanks and filling with an inert material
- Post-remediation sampling at the bottom of the excavation to verify FRGs are met and analyze for additional contaminants in the PM-2A Tank content waste to perform a risk analysis in support of an institutional control determination at this site
- Filling the excavated area with clean soil, then contouring and grading to surrounding soil
- Institutional controls consisting of signs, access control, and land-use restrictions may be established and maintained depending on the results of the sampling activities.

The selected remedy addresses the risks by the PM-2A Tanks by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed. A review of the institutional controls, if required as part of the remedy, will be conducted no less than every 5 years.

Soil Contamination Area South of the Turntable (TSF-06, Area B)

For the Soil Contamination Area South of the Turntable, the selected remedy is Excavation and On-Site Disposal, which will address the low-level threat posed by the waste at this site. The major components of the selected remedy include:

- Sampling to identify the extent of soil exceeding the FRG and sample for contaminants that were identified in the PM-2A Tanks to support a no-longer-contained-in determination and hazardous waste determination preparation for this site
- Removal of the adjacent road (Snake Avenue) and perform radiological surveys and sampling on the road base to determine areas exceeding the FRG
- Excavating contaminated soil to a maximum of 3 in (10 ft) or the maximum depth at which contaminant concentrations are above final remediation goals, whichever is less
- Sampling to verify the final remediation goal was met
- Disposing of the contaminated soil at an acceptable soil repository
- Backfilling the excavated area with clean soil, then contouring and grading to surrounding soil.

The selected remedy addresses the risks posed by the Soil Contamination Area South of the Turntable by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed. Institutional controls will not be required, unless contamination above FRGs are found below 3 m (10 ft), because all contamination is expected to be removed and all exposure pathways eliminated.

Disposal Pond (TSF-07)

For the Disposal Pond, the selected remedy is Limited Action, which will address the low-level threat posed by the waste at this site. The major components of the selected remedy include:

- Soil sampling will be performed for contaminants identified in the TSF-05 injection well to support a no-longer-contained-in determination for the surface soils at TSF-07
- Inspecting existing operational controls to assess the adequacy and need for additional institutional controls
- Implementing additional institutional controls as needed, including access restrictions (e.g., fences, posted signs, and permanent markers) limiting land use for at least 100 years
- Environmental monitoring for at least 100 years to protect current and future occupational receptors.

A review of the selected remedy will be conducted no less than every 5 years until it is determined by the Agencies to be unnecessary. The objective of the institutional controls is to effectively prevent access to the area and exposure to contaminated media until such time that the risk from Cs-137, due to decay, will diminish to acceptable risk levels for unrestricted land use within 100 years.

Burn Pits (TSF-03 and WRRTF-01)

For the Burn Pits, the selected remedy is a Native Soil Cover, which will address the low-level threat posed by the waste at this site. Sampling will be performed to assess the Burn Pits for additional contaminants of concern (COCs) that may not have been properly evaluated during the RI. If the sampling indicates that additional contaminants are present, a cost evaluation will be performed based on the design of the cover required to be protective of human health from contaminants at this site. If it is determined to be cost effective to excavate and dispose of the Burn Pits contents at an approved facility, then that option may be performed. The major components of the selected remedy, Native Soil Cover, for the Burn Pits include:

- Sampling to determine the cover design and monitoring requirements, and to ensure the remedy is protective of human health and the environment
- Comparing cost of the soil cover and long-term monitoring with the excavation and disposal option
- If the soil cover option is selected, adding uniform layers of clean soil and surface vegetation to limit direct contact with contaminated soil
- Inspecting existing institutional controls to assess the adequacy and need for additional controls.

As part of this remedy, institutional controls will be implemented (e.g., fences, posted signs, and permanent markers), for at least 100 years, and periodically inspected and maintained to ensure the integrity of institutional controls. A review of the remedy will be conducted no less than every 5 years until it is determined by the Agencies to be unnecessary.

The selected remedy addresses the risks by the Burn Pits by effectively preventing access to the area and exposure to contaminated media. If as a result of the cost comparison, the excavation and disposal option is implemented, that remedy will address the risk by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed, and may eliminate the need for institutional controls at the site.

Fuel Leak (WRRTF-13)

For the Fuel Leak, the selected remedy is Excavation and Land Farming, which will address the low-level threat posed by the waste at this site. The major components of the selected remedy include:

- Sampling the Fuel Leak soil to determine risk-based remediation goals in accordance with the State of Idaho Risk-Based Corrective Action guidance *(Risk-Based Corrective Action Guidance Document for Petroleum Releases)* and the Idaho Division of Environmental Quality guidance *(Information Series # 7: Procedures for Land Treatment of Petroleum Contaminated Soils),* and determine land farming excavation volumes

- Excavating contaminated soil to a maximum of 3 m (10 ft) or the maximum depth that contaminant concentrations are above risk-based remediation goals in accordance with the State of Idaho Risk-Based Corrective Action guidance *(Risk-Based Corrective Action Guidance Document for Petroleum Releases),* whichever is less

- Sampling to ensure contaminated soil exceeding remediation goals has been removed

- Treating the contaminated soil at the Central Facilities Area Land Farm

- Backfilling excavated area with clean soil, including any stockpiled, then contouring and grading to surrounding soil.

The selected remedy addresses the risks posed by the Fuel Leak by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed. Institutional controls may be required, if contamination above cleanup standards is found below 3 m (10 ft), however, all contamination is expected to be removed and all exposure pathways eliminated.

Additional Components of the Selected Remedy for Waste Area Group 1

The selected remedies for specific sites, as described above, will be implemented in conjunction with remedial actions for the entire WAG 1. The additional components of the remedy selected for WAG 1 include institutional controls and disposition of stored investigation-derived waste.

Institutional Controls. No additional remediation will be conducted under CERCLA for 83 of the 94 sites at WAG 1. However, institutional controls will be maintained at some of these sites because residual contamination precludes unrestricted land use. Institutional controls will also be maintained in the interim until the selected remedy has been implemented at six of the eight sites identified for remediation. Long-term institutional control will be required for three sites identified for remedial action (Disposal Ponds and Burn Pits) and the other five sites requiring remedial action will be evaluated after remedial actions have been completed. Because remediation goals are based on soil concentrations equivalent to a risk of 1E-04 to a hypothetical resident living on the site 100 years in the future, institutional controls may be required after cleanup. However institutional controls will not be required after remediation if all contaminated media are removed to basalt, if contaminant concentrations are

comparable to local background values, or if residual concentrations are less than or equal to a 1E-04 risk-based soil concentrations for a hypothetical current or future residential scenario.

The U.S. Department of Energy (DOE) ensures that institutional controls will be in effect over the next 100 years unless a 5-year review concludes that unrestricted land use is allowable. After 100 years, DOE may no longer manage INEEL activities and controls will take the form of land-use restrictions. Though land use after 100 years is uncertain, it is likely that industrial operations will continue at the INEEL and WAG 1.

Institutional controls will be applied initially to the sites listed in the following table. The list of sites requiring institutional controls will be modified as selected remedies are implemented and the results of verification sampling are available. The list also will be subject to change as a consequence of future 5 -year reviews.

Institutional control sites at Waste Area Group 1.

Site Code	Description
IET-04	IET Stack Rubble Site
TST-03[a]	TSF Burn Pit
TSF-05[b]	TSF Injection Well
TSF-06, Area 1	TAN/TSF Soil Area, Northeast of Turntable
TSF-06, Area 5	TAN/TSF Soil Area, Radioctive Soil Berm
TSF-06, Area 11	TAN/TSF Soil Area, TSF-60 Ditch
TSF-06, Area B[a]	TAN/TSF Soil Area, Soil Area South of Turntable
TSF-07[a]	TSF Disposal Pond
TSF-08	TSF HTRE III Mercury spill Sites 13B and 13C
TSF-09[a]	TSF Intermediate-Level (Radioactive) Waste Disposal System
TSF-10	Drainage Pond
TSF-18[a]	Contaminated Tank Southeast of Tank V-3
TSF-23[b]	Contaminated Groundwater Beneath TSF
TSF-26[a]	TSF PM-2A Tanks
TSF-28	TSF Sewage Treatment Plant and Sludge Drying Beds
TSF-29	TSF Acid Pond
TSF-39	TSF Transite (Asbestos) Contamination
TSF-42	TAN-607-A Room 161 Contaminated Pipe
TSF-43	RPSSA Buildings 647/648 and Pads
WRRTF-01[a]	WRRTF Burn Pits I, II, III, and IV
WRRTF-13[a]	WRRTF Fuel Leak

a. This site is identified for remediation under this ROD. Until cleanup is implemented, existing institutional controls will be maintained. Long-term institutional controls will be determined after remediation is completed. Land use controls will not be required after remediation if all contaminated media are removed to basalt, if contaminant concentrations are comparable to local background values, or if residual concentrations from the COCs are less than the 1E-04 risk-based soil concentrations for a hypothetical current residential scenario.
b. This site is identified for remedial action under the OU 1-07B ROD.

Potential New Sites

The possibility exists that contaminated environmental media not identified by the INEEL FFA/CO or in this comprehensive investigation will be discovered in the future as a result of routine operations, maintenance activities, or (D&D) activities at TAN. New sites will be addressed using the process for new site inclusion, as defined in the FFA/CO, and will be assessed and remediated pursuant to the process agreed upon by the Agencies at the time of the new site identification. Where appropriate, the remedial action objectives and FRGs identified in this ROD will be used to complete potential cleanup.

Investigation-Derived Waste

Investigation-derived waste has been generated as a result of previous sampling activities at WAG 1. This waste will be appropriately characterized, assessed, and dispositioned in accordance with regulatory requirements under this ROD.

Closure of RCRA/HWMA Sites

The Agencies intend to complete cleanup of the V-Tanks (TSF-09/18) and PM-2A Tanks (TSF-26) under this ROD. These tanks, along with the TSF-19 and TSF-21 tanks, are subject to closure under the State of Idaho Hazardous Waste Management Act (HWMA) authority separate from this ROD.

Statutory Determination

The selected remedy for each site has been determined to be protective of human health and the environment, to comply with federal and state requirements that are legally applicable or relevant and appropriate (applicable or relevant and appropriate requirements to the remedial actions), and to be cost effective.

These remedies use permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because treatment of radionuclide-contaminated soil is not found to be practical, those remedies addressing radionuclide-contaminated soils do not satisfy the statutory preference for treatment as a principal element of the remedy. The EPA's preference for sites that pose relatively low-level threats or where treatment is impractical is engineering controls, such as containment.

For those sites where contaminants are to be left in place (e.g., Containment and Limited Action) in excess of health-based levels, a review will be conducted no less than every 5 years after the initiation of the first remedial action (statutory 5-year review) to ensure that the remedy is still effective in protecting human health and the environment and to assess the need for future long-term environmental monitoring and institutional controls. These comprehensive statutory 5-year reviews will be conducted to evaluate factors such as contaminant migration from sites where contamination has been left in place, effectiveness of institutional controls, and overall effectiveness of the remedial actions. For the Limited Action remedy, it is assumed that the institutional controls will remain in place for at least 100 years.

The Agencies concur that “No Action” be taken at 76 sites and “No Further Action,” which will include institutional controls, be taken at seven sites, plus three additional subareas of TSF-06. Those sites for which “No Further Action” is taken, based on the residential land-use assumptions, will be reviewed as part of the 5-year review process.

ROD Data Certification Checklist

The following information is included in the *Decision Summary,* (Part II) of this ROD. Additional information can be found in the Administrative Record for these sites.

- COCs and their respective concentrations (Part II p. 6-7)
- Baseline risk represented by the COCs (Part II p. 6-7)
- Cleanup levels established for COCs and the basis for the levels (Part II p. 6-7).
- Current and future land and groundwater use assumptions used in the baseline risk assessment and ROD (Part II Section 6)
- Land and groundwater use that will be available at the site as a result of the selected remedies (Part II Section 6)
- Estimated capital, operation and maintenance, and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (see selected remedy cost tables in Part II Sections 7-9)
- Decisive factor(s) that led to selecting the remedy (see alternative discussions in Part II Sections 7-9).

Signature Sheet

Signature sheet for the Record of Decision for OU 1-10, located in Waste Area Group 1, Test Area North, of the Idaho National Engineering and Environmental Laboratory, between the U.S. Environmental Protection Agency Region 10 and the U.S. Department of Energy Idaho Operations Office, with concurrence by the Idaho Department of Health and Welfare, Division of Environmental Quality.

Chuck Clarke, Regional Administrator
Region 10
U.S. Environmental Protection Agency

11-22-99
Date

Signature Sheet

Signature sheet for the Record of Decision for OU 1-10, located in Waste Area Group 1, Test Area North, of the Idaho National Engineering and Environmental Laboratory, between the U.S. Environmental Protection Agency Region 10 and the U.S. Department of Energy Idaho Operations Office, with concurrence by the Idaho Department of Health and Welfare, Division of Environmental Quality.

C. Stephen Allred, Administrator
Division of Environmental Quality
Idaho Department of Health and Welfare

Dec. 14, 1999
Date

Signature Sheet

Signature sheet for the Record of Decision for OU 1-10, located in Waste Area Group 1, Test Area North, of the Idaho National Engineering and Environmental Laboratory, between the U.S. Environmental Protection Agency Region 10 and the U.S. Department of Energy Idaho Operations Office, with concurrence by the Idaho Department of Health and Welfare, Division of Environmental Quality.

Beverly A Cook

Beverly A. Cook, Manager
U.S. Department of Energy,
Idaho Operations Office

12-2-99

Date

CONTENTS

FIGURES

TABLES

ACRONYMS

AEC	U.S. Atomic Energy Commission
ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BLM	U.S. Bureau of Land Management
BRA	baseline risk assessment
CAB	Citizens Advisory Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CFR	Code of Federal Regulations
COC	contaminant of concern
COCA	Consent Order and Compliance Agreement
COPC	contaminant of potential concern
CWSU	CERCLA Waste Storage Unit
D&D	decontamination and dismantlement
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
ESD	Explanation of Significant Differences
FFA/CO	Federal Facility Agreement and Consent Order
FR	federal register

FRG	final remediation goal
FS	feasibility study
FY	fiscal year
G&A	general and administrative
GEMEP	General Electric Mercury Extraction Process
HEPA	high-efficiency particulate air
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
HWD	hazardous waste determination
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA Disposal Facility
IDAPA	Idaho Administrative Procedures Act
IDHW	Idaho Department of Health and Welfare
IDW	investigation-derived waste
IET	Initial Engine Test
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
ISV	in situ vitrification
LDR	land disposal restriction
LOFT	Loss-of-Fluid Test
MCL	maximum contaminant level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants

NPV	net present value
O&M	operation and maintenance
OU	operable unit
PCB	polychlorinated biphenyl
PID	photo ionization detector
PRG	preliminary remediation goal
RAO	remedial action objective
RBCA	risk-based corrective action
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action
RI	remedial investigation
ROD	Record of Decision
RPSSA	Radioactive Parts Service and Storage Area
RWMC	Radioactive Waste Management Complex
SLERA	screening-level ecological risk assessment
SMC	Specific Manufacturing Capability
SRPA	Snake River Plain Aquifer
TAN	Test Area North
TBC	to-be-considered
TCE	trichloroethylene
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbon
TRV	target risk value
TSCA	Toxic Substances Control Act
TSF	Technical Support Facility

UCL	upper confidence level
USGS	U.S. Geological Survey
UST	underground storage tank
WAG	waste area group
WERF	Waste Experimental Reduction Facility
WIPP	Waste Isolation Pilot Plant
WRRTF	Water Reactor Research Test Facility

NOMENCLATURE

‹C	degree Celsius
‹F	degree Fareheit
µg	microgram
Am	americium
cm	centimeter
Co	cobalt
Cs	cesium
Eu	europium
ft	feet
g	gram
gal	gallon
H	hydrogen
in.	inch
kg	kilogram
km	kilometer
L	liter
lb	pound
m	meter
mg	milligram
mi	mile
mrem	milliroentgen-equivalent man
pCi	picocurie
Ra	radium
Th	thorium
yr	year

Waste Area Group 1
Record of Decision

Part II) Decision Summary

1. SITE NAME, LOCATION, AND DESCRIPTION

The Idaho National Engineering and Environmental Laboratory (INEEL) is a U.S. Department of Energy (DOE) facility located in southeastern Idaho, 51.5 km (32 mi) west of Idaho Falls (Figure 1-1). The laboratory encompasses approximately 2,305 km^2 (890 mi^2) of the northeastern portion of the Eastern Snake River Plain and extends across portions of five Idaho counties: Butte, Jefferson, Bonneville, Clark, and Bingham.

Current land use at the INEEL is primarily for nuclear research, development, and waste management. The perimeter area of the INEEL is leased for cattle and sheep grazing under the management of the U.S. Bureau of Land Management. The perimeter area functions as a controlled safety-and-security buffer between INEEL activities and the general public. No grazing takes place within 0.8 km (0.5 mi) of any facility boundaries. Controlled hunting is permitted on INEEL land, but is restricted to the 0.8 km (0.5 mi) strip just inside the site boundary.

State Highways 22, 28, and 33 cross the northeastern portion of the INEEL and U.S. Highways 20 and 26 cross the southern portion. Except for public travel on the highways, access to the INEEL is controlled by fences and security personnel.

The INEEL has a cool desert climate. Summers are mild and dry with normal temperatures ranging from 10 to 31<C (50 to 88<F), while winter temperatures range from -16 to 2<C (3 to 28<F). Annual precipitation averages are 23 cm (9.1 in.).

The Snake River Plain Aquifer (SRPA), the largest potable aquifer in Idaho, underlies the Eastern Snake River Plain. The aquifer covers an area of approximately 24,853 km^2 (9,600 mi^2) . Approximately 9% of the aquifer's area is below the INEEL. The depth to the aquifer varies from approximately 61 m (200 ft) below Test Area North (TAN) to approximately 274 m (900 ft) on the southwest edge of the INEEL.

More than 400 plant species, 190 bird species, and 40 mammal species have been identified on the INEEL. Several bird species at the INEEL warrant attention because of sensitivity to disturbance or their threatened status, including the ferruginous hawk *(Buteo regalis),* bald eagle *(Haliaeetus leucocephalus),* long-billed curlew *(Numenius americanus),* and the loggerhead shrike *(Lanius Ludovicianus).* In addition, the Townsend's big-eared bat *(Plecotus Towndendii)* and pygmy rabbit *(Brachylagus Idahoensis)* are listed by the U.S. Fish and Wildlife Service as candidates for consideration as threatened or endangered species. The ringneck snake *(Diadophis punctatus),* whose occurrence is considered to be INEEL-wide, is listed by the Idaho Department of Fish and Game as a Category C sensitive species.

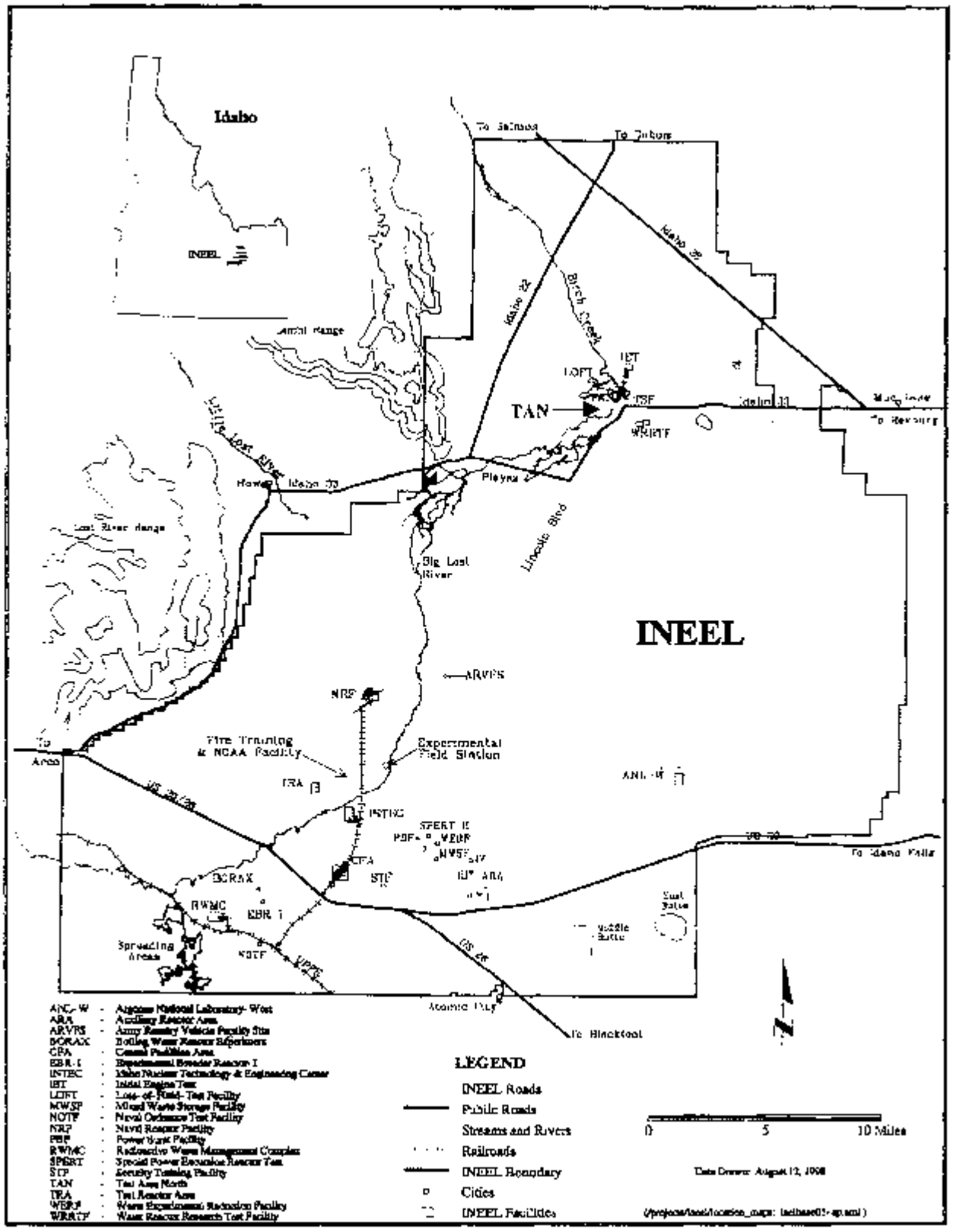


Figure 1-1. Location of Test Area North at the Idaho National Environmental and Engineering Laboratory.

The INEEL lies within the lands traditionally occupied by the Shoshone-Bannock Tribes. The tribes used the land and waters within and surrounding the INEEL for fishing, hunting, and plant gathering, in addition to medicinal, religious, ceremonial, and other cultural uses. Under the cooperative *Agreement-in-Principle between the Shoshone-Bannock Tribes and the U.S. Department of Energy* (DOE 1998) some tribal activities continue today within the INEEL boundaries.

The TAN area is approximately 41-ha (102-acre), located in the north-central portion of the INEEL (see Figure 1-1). The area includes four different facilities: (1) the TAN Technical Support Facility (TSF), (2) the Initial Engine Test Facility (IET), (3) the Water Reactor Research Test Facility (WRRTF), and (4) Specific Manufacturing Capability (SMC)/Loss-of-Fluid Test (LOFT) Facility. Figure 1-2 shows the locations of the TAN facilities.

Since the INEEL is a DOE facility, any National Environmental Policy Act (NEPA) issues that affect the sites identified in this Record of Decision (ROD) will be addressed in the Storm Water Pollution Prevention Plan, the Environmental Checklist, and other appropriate post-ROD documents.

1.1 Future Land Use

The INEEL is expected to remain under government management and control for at least the next 100 years. Regardless of the future use of land now occupied by the INEEL, the federal government has an obligation to provide adequate institutional controls (i.e., limit access) to areas that pose a significant health and/or safety risk to the public and workers until that risk diminishes to an acceptable level for the intended purpose. Achievement of this obligation hinges on continued Congressional appropriation of sufficient funds to the responsible government entity charged to maintain the institutional controls for as long as necessary and as long as the federal government of the United States remains viable.

Facility and land use at the INEEL have been projected for 100 years into the future. The projections, or "scenarios," illustrate the type and extent of operations the INEEL and its stakeholders find acceptable. No changes to the present INEEL boundaries are expected within the 100-year period. Most of the developed areas of the Site are projected to remain industrial. Grazing will continue in the buffer area, but no residential development (i.e., housing) will be allowed within INEEL boundaries. No major new private development (residential or nonresidential) adjacent to the Site is expected for at least 25 to 50 years.

The scenarios developed for the INEEL are illustrated in the *Long-Term Land Use Future Scenarios for the Idaho National Engineering Laboratory* (U.S. Department of Energy Idaho Operations Office [DOE-ID] 1995a) report. Planners at the INEEL use this and two other documents, the Idaho National Engineering and Environmental Laboratory *Comprehensive Facility and Land Use Plan* (DOE-ID 1997a) and the *Idaho National Engineering and Environmental Laboratory Environmental Management End State Planning Document* (INEEL 1998a), to guide their decisions about INEEL land and facility use.

Unless the U.S. resumes former levels of defense-related activities, plans for TAN are to complete current programs, deactivate all facilities, and finish environmental restoration. Some facilities currently supporting area programs will be redirected to support deactivation and environmental restoration activities. The WRRTF area is scheduled for a major rehabilitation to support ongoing research and development activities, and is expected to be operational for another 20 years.

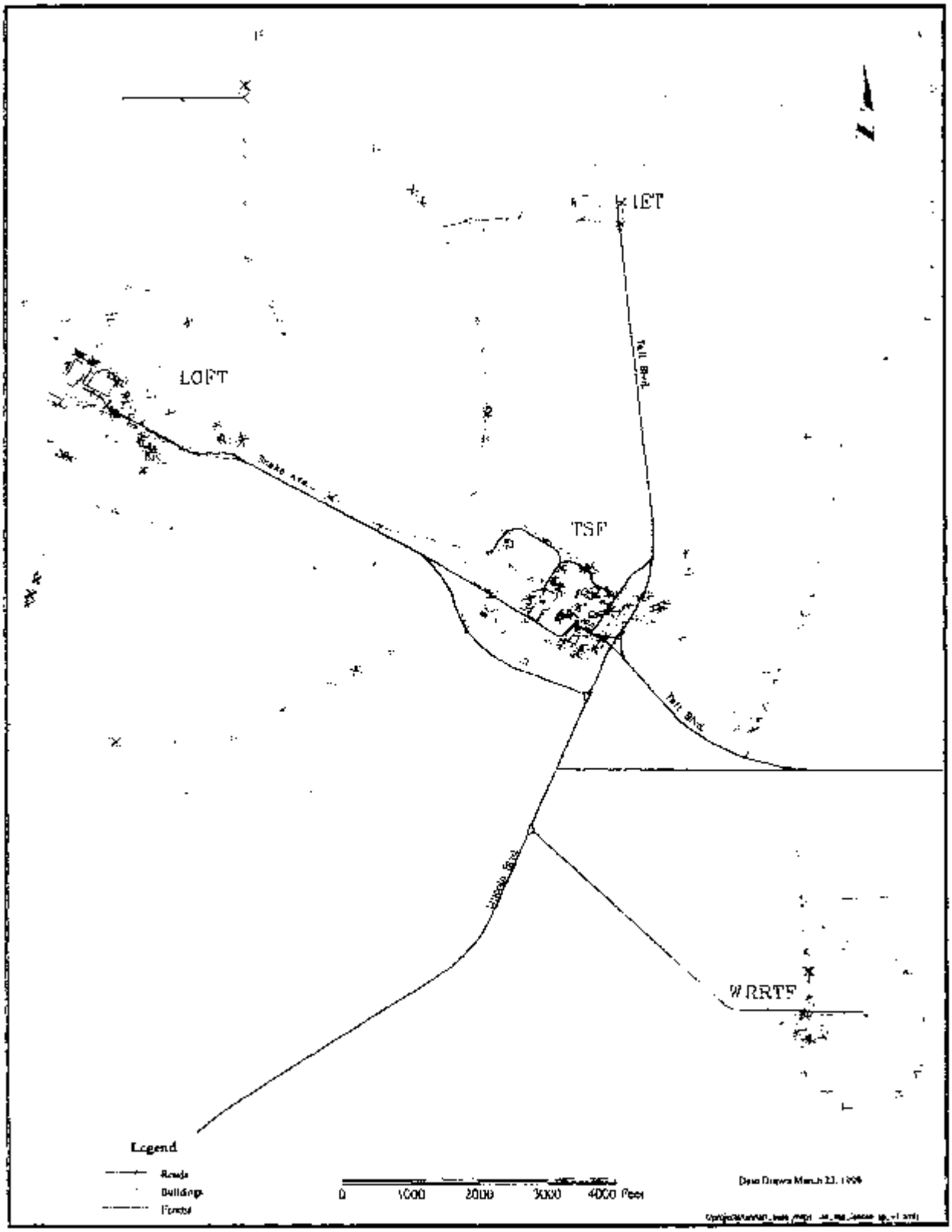


Figure 1-2. Location of major facilities within TAN.

The facilities at TAN are nearing the end of their life cycles and will not be required for the INEEL's future missions. Other than construction of short-term support facilities for current operations at TAN, development of nuclear facilities is considered to be unlikely. The 25-year scenario (1994-2019) anticipates decontamination and dismantlement (D&D) of selected facilities at TAN: By 2044 (the 50-year scenario), the useful life of TAN will be completed. The D&D of the remaining facilities will commence. The Aircraft Nuclear Propulsion Program Hanger (Building TAN-629) will likely be maintained as a National Historical Monument.

By 2094 (the 100-year scenario), TAN will be an established industrial development area. However, because of the technical difficulty of remediating contaminants in the groundwater plume underneath TAN, institutional controls that include fences, warning markers, and property transfer documentation are likely to remain in place beyond the 100-year scenario.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 Site History

The INEEL was established in 1949 as the National Reactor Testing Station by the U.S. Atomic Energy Commission (AEC) for nuclear energy research and related activities. It was redesignated the Idaho National Engineering Laboratory in 1974 and the INEEL in 1997 to reflect the expansion of its mission to include a broader range of engineering and environmental management activities.

Test Area North was constructed between 1954 and 1961 to support the Aircraft Nuclear Propulsion Program. The program's objectives were to develop and test designs for nuclear-powered aircraft engines. Upon termination of this research in 1961, the area's facilities were converted to support a variety of other DOE research projects.

From 1962 through the 1970s, the area supported reactor safety testing and behavior studies at the Loss-of-Fluid Test (LOFT) Facility. Beginning in 1980, the area was used to conduct work with material from the 1979 Three Mile Island reactor accident. Current activities include the manufacture of armor for military vehicles at the SMC, nuclear inspection, and storage operations at the IET, TSF, and WRRTF.

2.2 Enforcement Activities

In July 1987, a Consent Order and Compliance Agreement (COCA) was signed by the DOE, the U.S. Environmental Protection Agency (EPA), and the U.S. Geological Survey (USGS). Under the COCA, 32 sites were evaluated, including the groundwater contamination at TAN and three injection wells.

In November 1989, the EPA placed the INEEL on the National Priorities List of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (54 Federal Register [FR] 48184). A Federal Facility Agreement and Consent Order (FFA/CO) and Action Plan was signed in 1991 by the Agencies, which superseded the COCA. The FFA/CO established the procedural framework and schedule for developing, prioritizing, implementing, and monitoring response actions at the INEEL in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and the Idaho Hazardous Waste Management Act (HWMA).

To better manage cleanup activities, the INEEL was divided into 10 waste area groups (WAGs); TAN is designated as WAG 1. The FFA/CO also established 10 operable units (OUs) within the TAN complex and identified 79 potential release sites for study. An additional 15 sites were identified at TAN subsequent to the signing of the FFA/CO, bringing the total number of release sites requiring investigation to 94.

The TAN groundwater contamination and 31 other sites that were evaluated with it were addressed under the OU 1-07A interim action to reduce the contamination near the TSF-05 injection well and in the surrounding groundwater. The results of this investigation were presented in the August 1995 *Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 1995b), which finalized the remedial action for the TAN groundwater contamination. Thirty of the 32 sites were identified as "No Action" sites. Cleanup activities at the other two sites are on track to meet the remedial action objectives (RAOs) identified in that ROD.

The remaining 62 potential release sites at TAN were examined under OU 1-10 comprehensive remedial investigation (RI)/feasibility study (FS) (DOE-ID 1997b), which culminates in this ROD. Of these sites, 53 were determined not to require cleanup activities (see Table 1-1 of the comprehensive RI/FS). Eight sites may present an imminent and substantial endangerment to human health and the environment and require remedial action. One site, the Mercury Spill Area (TSF-08), was selected for a treatability study that will be conducted by WAG 10. If necessary, TSF-08 will be remediated under WAG 1 based on the results of the treatability study. The Agencies will determine the appropriate response action to be taken in accordance with the FFA/CO and this ROD.

A Proposed Plan (DOE-ID 1998a) describing the results of the comprehensive RI/FS (DOE-ID 1997b) was released in February 1998 to identify the Agencies' preferred alternative for the eight sites and the Mercury Spill Area. In response to public comments on both the overall readability of the plan and specific technical issues raised within it, the plan was revised and an FS Supplement was prepared to support the revisions. A revised Proposed Plan (DOE-ID 1998b) and an OU 1-10 FS Supplement (DOE-ID 1998c) were issued in November 1998.

2.3 Reference Materials

A ROD provides the public with a summary of information about the site and the decisions made regarding it. The decisions made in this ROD are primarily based on the following documents, which can be found in the Administrative Record:

General Documents

- *Agreement-in-Principle between the Shoshone-Bannock Tribes and the U.S. Department of Energy* (DOE 1998)
- *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991)
- *Idaho National Engineering and Environmental Laboratory Comprehensive Facility and Land Use Plan* (DOE-ID 1997a)
- *Idaho National Engineering and Environmental Laboratory Environmental Management End State Planning Document* (INEEL 1998a)
- *Long-Term Land Use Future Scenarios for the Idaho National Engineering Laboratory* (DOE-ID 1995a)
- *Preliminary Scoping Track 2 Summary Report for TAN OU 1-05 Radioactive Contamination Sites* (INEL 1994)
- *Health Effects Assessment Summary Tables: Annual FY-1994* (EPA 1994)
- *Adininistrative Record File Index* (Appendix B)

WAG 1 Documents

- *Comprehensive Remedial Investigation/Feasibility Study for the Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory* (Comprehensive RI/FS) (DOE-ID 1997b)

- *Comprehensive Remedial Investigation/Feasibility Study Supplement for Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory* (FS Supplement) (DOE-ID 1998c)

- *Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 1995b).

3. HIGHLIGHTS OF COMMUNITY PARTICIPATION

In accordance with CERCLA §113(k)(2)(B)(i-v) and §117, opportunities for public information and participation in the WAG 1 RI and decision process were provided from December 1995 through January 1999. The INEEL Community Relations Plan was used as a guidance document during the course of the OU 1-10 investigation for outlining public involvement activities. Those opportunities included:

- A "kick-off" fact sheet released in December 1995
- Media briefings for reporters from across Idaho
- Regular reports about the investigation in bimonthly issues of the INEEL Reporter (an Environmental Restoration Program newsletter mailed to more than 6,000 individuals on the INEEL mailing list)
- Advertisements and announcements in regional newspapers and radio news programs
- The Proposed Plan
- Updated Fact Sheet
- Revised Proposed Plan
- Focus group comprising members of the public
- Briefings and presentations to interested groups
- Public meetings.

The "kick-off" fact sheet on the WAG 1 comprehensive RI/FS was sent to approximately 6,200 members of the public and 340 INEEL employees. The fact sheet offered technical briefings and included a postage-paid return mailer comment form. The fact sheet was the initial opportunity for the public to be involved in the TAN comprehensive RI process. No briefings were requested, but comments were received from two members of the public. These comments were evaluated and considered during preparation of the project work plan.

Media briefings for reporters from Idaho Falls, Pocatello, Twin Falls, and Boise, in September and October 1997, resulted in local newspaper articles and a story distributed nationally by the Associated Press. The investigation was also highlighted in four national industry publications ! *Defense Cleanup*, *Superfund Week*, *Inside Energy*, and *Weapons Complex Monitor* ! and several area radio talk/news shows.

Briefings about the TAN investigation were presented to the INEEL Citizens Advisory Board (CAB) in March, May, September, and November 1998, and January 1999. The CAB is the federally chartered Environmental Management Site-Specific Advisory Board for the INEEL. Members of the general public are invited to attend the CAB meetings and provide input.

Briefings were also provided, by request, to several stakeholder groups, including the Environmental Defense Institute, Coalition 21, the Shoshone-Bannock Tribal Council, and University of Idaho students.

In February 1998, the DOE-ID issued a news release to more than 100 media contacts, announcing a 30-day public comment period and public meetings for the TAN Proposed Plan. Advertisements announcing the same information appeared in six regional newspapers: the *Post Register* (Idaho Falls), the *Idaho Statesman* (Boise), the *Sho-Ban News* (Fort Hall), the *Idaho State Journal* (Pocatello), the *Times News* (Twin Falls), and the *Daily News* (Moscow).

The news release resulted in short notes in community calendar sections of newspapers and in public service announcements on radio stations. The news release and advertisements also announced the availability of TAN investigation documents in the Administrative Record section of the INEEL Information Repositories located in the INEEL Technical Library in Idaho Falls and in public libraries in Fort Hall and Moscow (the Fort Hall Information Repository was moved to Boise in September 1998). Additionally, a postcard was mailed to approximately 6,200 citizens on the INEEL mailing list announcing the availability of the Proposed Plan, the comment period, and public meetings.

In February 1998, the Proposed Plan was mailed to about 700 members of the public on the INEEL mailing list, urging them to attend the public meetings and to provide input. Public meetings were held in Idaho Falls on February 23, Boise on February 24, and Moscow on February 26, 1998. Comment forms were included in the Proposed Plan and were available at the meetings for submitting written comments either at the meeting or by mail. The reverse side of the meeting agenda contained a form for the public to use in evaluating the effectiveness of the meeting. A court reporter was present at each meeting to prepare transcripts of discussions and public comments. The meeting transcripts were placed in the Administrative Record section for the WAG 1, TAN, OU 1-10 in the INEEL Information Repositories. More than 20 members of the public, not associated with the project, attended the public meetings.

The comment period began February 16; a 30-day extension requested by a member of the public extended the public comment period to April 17, 1998. News releases, advertisements, and postcards also were issued to announce the comment period extension.

Public comments received on the Proposed Plan (including a recommendation from the INEEL CAB) raised concerns about the readability, organization, and clarity of the Proposed Plan, as well as several technical questions. In response to the comments, the FS and Proposed Plan were reexamined to address the technical questions and a focus group comprising 10 members of the public from around the state was convened to solicit public input on improving this and other INEEL proposed plans. The Proposed Plan was revised to incorporate changes that were required because of these issues.

An updated fact sheet was released in November 1998 along with the OU 1-10 FS Supplement and the revised Proposed Plan. The public comment period for the revised plan began November 23 and, due to a 30-day extension requested by a member of the public ended January 21, 1999. News releases, advertisements, and postcards announced the availability of the revised plan, the new comment period, and the comment period extension.

All comments received on both versions of the Proposed Plan (each released with separate public comment periods) were considered during the development of this ROD and are included in the Responsiveness Summary (Part III) and the Administrative Record. The decision for this action is based on the information in the Administrative Record for this OU. The Administrative Records are available to the public at the following locations.

INEEL Technical Library
DOE Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415
(208) 526-1185

Albertsons Library
Boise State University
1910 University Drive
Boise, ID 83725
(208) 385-1621

University of Idaho Library
University of Idaho Campus
434 2nd Street
Moscow, ID 83843
(208) 885-6344

and on the Internet **(http://ar.inel.gov/home.html).**

The Responsiveness Summary (Part III) was prepared as part of this ROD. All formal oral comments, as given at the public meetings, and all written comments, as submitted, are presented verbatim in the Responsiveness Summary and in the Administrative Record for the ROD. The comments are annotated to indicate which response in the Responsiveness Summary addresses each comment. Appendix A provides a scanned copy of the actual written comment as submitted. Appendix B provides the Administrative Record File Index.

4. SCOPE AND ROLE OF OPERABLE UNITS AND RESPONSE ACTIONS

Waste Area Group 1 includes the TSF, IET, LOFT, SMC, and WRRTF fenced areas, as well as the immediate areas outside the fence lines. Potential release sites addressed at the TSF include: tanks, spills, disposal sites, and wastewater disposal systems (e.g., sumps, tanks, an injection well, ponds, and lagoons). The IET potential release sites investigated include: tanks, an injection well, and rubble disposal sites. Potential release sites investigated at LOFT and SMC include: pits, tanks, a wastewater disposal pond, and two small historic spill sites. The WRRTF sites investigated include: tanks, a wastewater pond, an injection well, a burn pit, a sewage lagoon, and petroleum contaminated soil.

Since 1991, 94 potential release sites have been studied at TAN. This includes 79 sites originally identified in the FFA/CO (DOE-ID 1991), plus 15 additional sites identified during the comprehensive RI/FS. Thirty-two sites were addressed in the August 1995 *Record of Decision, Declaration for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action* (DOE-ID 1995b). This is the final ROD for the sites that were investigated under OU 1-10, and evaluates institutional controls for all sites at WAG 1, including the OU 1-07B ROD "No Action" sites, where an unacceptable risk for unrestricted land use remains.

The 62 potential release sites under OU 1-10 were examined in the comprehensive RI/FS leading to this ROD. Monitoring data, process knowledge, written correspondence, interviews with current and previous employees, previous agency investigations and decisions, and site characterization data were used to determine the nature and extent of contamination at each site and to evaluate potential risks to human health and the environment.

The task of the OU 1-10, the comprehensive RI/FS (DOE-ID 1997b), is to evaluate contamination of environmental media (soil, air, and groundwater) and the potential risks to human health and the environment from exposure to the media. In addition, risk produced through the air and groundwater exposure pathways is evaluated cumulatively. A cumulative analysis of these two exposure pathways involves calculating one WAG-wide risk number for each contaminant of potential concern (COPC) in each air and groundwater exposure route. Analyzing the air and groundwater pathways cumulatively is necessary because release sites within a WAG are typically isolated from one another with respect to the soil pathway exposure routes. Therefore, the soil pathway exposure route is analyzed on a release-site specific or noncumulative basis.

Of the 94 potential release sites in WAG 1, 83 were determined not to pose an imminent and substantial endangerment to human health and the environment, based on a residential scenario. The sites, classified as "No Action" or "No Further Action" are listed in Table 4-1. Explanation of "No Action" and "No Further Action," site status information and the rationale for the "No Action" or "No Further Action" determination can be found in Section 12. More detailed information about these sites can also be found in the comprehensive RI/FS. Of these 83 sites at WAG 1, 76 are "No Action" and seven (plus three subareas of TSF-06) are "No Further Action." Approval of this ROD will formalize the "No Action" and "No Further Action" decision (see Table 4-1).

Two sites, LOFT-02 (the LOFT Disposal Pond) and WRRTF-03 (the WRRTF Evaporation Pond [TAN-762]), did not pose a risk threat to human health but ecological risks were greater than threshold levels. The LOFT-02 and WRRTF-03 sites are "No Action" sites. Ecological risks at these two sites will

Table 4-1. The WAG 1 sites recommended for "No Action" and "No Further Action."

OU	"No Action"	"No Further Action"	Site Code	Site Name
1-01	X		IET-05	IET Foam Stabilizer Tank
	X		IET-06	IET Injection Well (TAN-332)
	X		LOFT-03	LOFT Rubble Pit South of LOFT Disposal Pond
	X		LOFT-07	LOFT Foam Solution Tank (TAN-119)
	X		LOFT-11	LOFT Cryogen Pits (3) East of TAN-629
	X		LOFT-14	LOFT Asbestos Piping
	X		LOFT-15	LOFT Buried Asbestos Pit
	X		TSF-01	TSF Diesel Tank West of TAN-607 and Fuel Spill
	X		TSF-04	TSF Gravel Pit/Acid Pit
	X		TSF-11	TSF Three Clarifier Pits East of TAN-604
		X	TSF-39	TSF Transite (Asbestos) Contamination
		X	TSF-42	TAN-607-A Room 161 Contaminated Pipe
		X	TSF-43	Radioactive Parts Security Storage Area (RPSSA) Buildings 647/648 and Pads
1-02	X		IET-01	IET Gasoline Storage Tank
	X		IET-09	IET Lube Oil Tank
	X		IET-10	IET Diesel Fuel Tank
	X		IET-11	IET Heating Oil Tank
	X		LOFT-05	LOFT Two Fuel Tank
	X		LOFT-06	LOFT Slop Tank East of TAN-631
	X		LOFT-08	LOFT Tank in Borrow Pits
	X		TSF-13	TSF Gasoline Tank North of TAN-610
	X		TSF-14	TSF Fuel Oil Tank Northwest of TAN-603
	X		TSF-15	TSF Fuel Tank West of TAN-603
	X		TSF-24	TSF Fuel Oil Tank Under Southwest Corner of TAN-607
	X		TSF-25	TSF Oil Sumps East of TAN-609
	X		TSF-32	TSF Oil Tank South of TAN-601
	X		TSF-33	TSF T-11 Fuel Tank East of TAN-602
	X		WRRTF-09	WRRTF Diesel Fuel Tank
	X		WRRTF-10	WRRTF Gasoline Tank
	X		WRRTF-12	WRRTF Diesel Tank
1-03	X		TSF-02	TSF Service Station Spill (TAN-664)
	X		TSF-38	TSF Bottle Site
1-04	X		LOFT-02	LOFT Disposal Pond

Table 4-1. (Continued)

OU	"No Action"	"No Further Action"	Site Code	Site Name
	X		TSF-12	TSF Acid Neutralization Sump North of TAN-602
	X		TSF-17	TSF Two Neutralization Pits North of TAN-649
	X		TSF-19	TSF Caustics Tank V-4 South of TAN-616
	X		TSF-20	TSF Two Neutralization Pits North of TAN-607
		X	TSF-29	TSF Acid Pond (TAN-735)
	X		TSF-31	TSF Acid Pit West of TAN-647
1-05		X	IET-04	IET Stack Rubble Site
	X		IET-07	IET Hot Waste Tank (TAN-319)
		X	IET-10	IET Drainage Pond (TAN-782)
	X		TSF-21	TSF IET Valve Pit
	X		WRRTF-04	WRRTF Radioactive Liquid Waste Tank
1-06	X		LOFT-01	LOFT Diesel Fuel Spills
	X		LOFT-10	LOFT Sulfuric Acid Spill
1-08	X		TSF-22	TSF Railroad Turntable
		X	TSF-28	TSF Sewage Treatment Plant (TAN-623) and Sludge Drying Beds
	X		WRRTF-05	Injection Well (TAN-331)
1-09	X		TSF-36	TAN-603 French Drain
	X		TSF-37	TSF Contaminated Well Water Spill
	X		WRRTF-02	WRRTF Two-Phase Pond
	X		WRRTF-03	WRRTF Evaporation Pond
	X		WRRTF-06	WRRTF Sewage Lagoon
1-10[a]	X		TSF-27	TSF Paint Shop Floor Drain Leach Field (West of TAN-636)
New sites	X		LOFT-16	LOFT Landfill Northeast of LOFT-02 Drainage Pond
	X		LOFT-12	LOFT North Transformer Yard Polychlorinated Biphenyl (PCB) Spill and Soil Site
	X		TSF-44	TSF Diesel Fuel Pipeline Lead Northwest of TAN-604)
	X		None	IET Pond and Ditch West of IET
	X		None	IET Gravel Pit
	X		None	IET Burn Pit East of IET
	X		None	LOFT Burn Pit Northwest of LOFT
	X		None	TSF Burn Pit II Southwest of the TSF-05 Injection Well

Table 4-1. (continued)

OU	"No Action"	"No Further Action"	Site Code	Site Name
	X		None	TSF Radioactive Spills on Bear Boulevard West of TAN-607
	X		None	Radioactive Still 1 mile South of TAN on Lincoln Boulevard.
	X		None	Sand Piles South of TSF and Southwest of WRRTF
	X		None	WRRTF Transite Area
	X		None	Broken Pipe in Berm East of IET
	X		None	Buried Asbestos behind the Hanger at SMC
None	X		IET-02	IET Burial Pit Northeast of IET
	X		IET-08	IET Septic Tank (TAN-710) and Filter Bed
	X		LOFT-04	LOFT Injection Well (TAN-733)
	X		LOFT-09	LOFT Septic Tank and Drainfield (TAN-762)
	X		LOFT-13	LOFT Dry Well (TAN-333)
	X		SMC-01	SMC Septic Tank and Drainfield (TAN-629)
	X		TSF-16	TSF Brine Pit North of TAN-608
	X		TSF-30	TSF Septic Tank East of TAN-602
	X		TSF-34	Fuel Tank South of TAN-607
	X		TSF-35	Acid Sump Southeast of TAN-609
	X		TSF-40	Rubble Pile near TAN
	X		TSF-41	Scrap Yard South
	X		TSF-45	AEC Burial Pit
	X		WRRTF-07	WRRTF Septic Tank and Sand Filters (TAN-737)
			None[b]	TAN-616 Evaporation Pit and Associated Releases

a. It has been agreed to by the DOE-ID and the State of Idaho Department of Health and Welfare that an action taken by CERCLA will close out the land disposal unit identified in the FFA/CO.

b. This site has been included under the new site identification per the FFA/CO and will be evaluated per the FFA/CO guidelines. However, this site was not evaluated in the OU 1-10 RI/FS.

be investigated as part of the OU 10-04 site-wide ecological risk assessment (ERA). If it determined that remedial action is required at these sites, the action will be performed and documented under WAG 1 and a separate decision.

One site, TSF-08 (the Mercury Spill Area), was selected for a treatability study using phytoremediation. Unacceptable risk to human health could occur in a future residential use scenario through gardening and ingestion of mercury contaminated crops. The treatability study will be performed by WAG 10 to determine mercury uptake factors and rates by plants. A revised risk analysis will be conducted using this site specific data. Based on the results of this study, a determination will be made as to subsequent action, if required. If remedial action is required at this site, the action will be performed

and documented by WAG 1. The Agencies will determine the appropriate response action to be taken, if required, in accordance with the FFA/CO and this ROD.

Eight sites may pose an imminent and substantial endangerment to human health and the environment if they are not remediated (see Table 4-2). The purpose of this response is to prevent current or future exposure to the contaminants at these sites. For this ROD, the eight sites have been placed in three groups on the basis of similarities in contamination. The groups include the following:

- Tank Sites—The Intermediate-Level (Radioactive) Waste Disposal System (TSF-09) and the Contaminated Tank Southeast of Tank V-3 (TSF-18) (collectively, the "V Tanks"), and the PM-2A Tanks (TSF-26). These tanks will be cleaned during the CERCLA remedial action, as a best management practice.

- Radionuclide-Contaminated Soil Sites—The TAN/TSF-1 Area (Soil Area) ("Soil Contamination Area South of the Turntable") (TSF-06, Area B) and the TSF Disposal Pond (TSF-07).

- Nonradionuclide-Contaminated Soil Sites—The TSF Burn Pit (TSF-03) and the WRRTF Burn Pits (I, II, III, and IV) (WRRTF-01) (collectively, the "Burn Pits"), and the WRRTF Diesel Fuel Leak (WRRTF-13) (the "Fuel Leak").

Table 4-2. The WAG 1 sites that may pose an imminent and substantial endangerment to human health and the environment in the absence of remedial action.

OU	Site Code	Site Name
1-03	TSF-03	TSF Burn Pit
	WRRTF-01	WRRTF Burn Pits (I, II, III, and IV)
1-05	TSF-06, Area B	TAN/TSF-1 Area (Soil Area) ("Soil Contamination Area South of the Turntable")
	TSF-09	TSF Intermediate-Level (Radioactive) Waste Disposal System ("V-Tank")
	TSF-18	Contaminated Tank Southeast of Tank V-3 ("V-Tank")
	TSF-26	TSF PM-2A Tanks
1-06	TSF-07	TSF Disposal Pond
1-08	WRRTF-13	WRRTF Diesel Fuel Leak

5. SUMMARY OF SITE CHARACTERISTICS

Typically, Section 5 would describe the site characteristics; Section 6, the summary of site risks: Section 7, the description of alternatives considered; and so forth. However, because this investigation covered a wide variety of sites, the sections have been somewhat modified. Section 6 presents the overall baseline risk assessment (BRA) process and information. Site characteristics, remediation goals, remediation alternatives, and cost estimates are presented for each group of sites in Section 7 (the Tank sites), Section 8 (the Radionuclide-Contaminated Soil/Sediment sites), and Section 9 (the Nonradionuclide-Contaminated Soil/Sediment sites).

6. SUMMARY OF SITE RISKS

A BRA was conducted to evaluate the potential adverse health effects for both a current land-use scenario (occupational) and future land-use scenario (residential) to human and nonhuman receptors associated with exposure to chemical and radioactive substances detected in the soil. The BRA included a human health risk assessment (HHRA) and an ERA. The BRA used data from the RI and was based upon the nature and extent assumptions as discussed in the comprehensive RI/FS Report. Additionally, computer modeling was employed to estimate the exposure point concentrations for select exposure routes. Detailed information about the BRA can be found in Sections 6 and 7 of the comprehensive RI/FS. Table 6-1 of the RI/FS Report is a summary of the COPCs considered in the BRA.

6.1 Human Health Risk Assessment

The HHRA consisted of two broad phases of analysis: (1) site and contaminant screening that identified COPCs at retained sites and (2) exposure route analysis for each COPC. The exposure route analysis included an exposure assessment, toxicity assessment, and risk characterization. The OU 1-10 HHRA estimated human health risks associated with exposure to contaminants through soil ingestion, fugitive dust inhalation, volatile inhalation, external radiation exposure, groundwater ingestion, ingestion of homegrown produce, dermal absorption of groundwater, and inhalation of water vapors because of indoor water use.

6.1.1 Contaminant Identification

Historical sampling data were used to identify contaminants present in surface soils at the WAG 1 sites. The list of contaminants was screened based on a comparison with background concentrations for the INEEL, a concentration-toxicity screen, a risk-based concentration screen, no evidence determination that contaminant was released at the site, and whether the contaminant is routinely considered to be an essential nutrient. Because substances that are essential nutrients can be toxic at high concentrations, this screening applied only at sites where essential nutrient concentrations were less than 10 times the background concentration.

In addition, an evaluation of groundwater concentrations associated with the WRRTF-05 injection well was conducted and a comparison was performed to ensure that the detected concentrations would not exceed maximum contaminant levels (MCLs) or risk-based concentrations.

6.1.2 Exposure Assessment

The human health exposure assessment quantified the receptor intake of COPCs for select pathways. The assessment consisted of estimating the magnitude, frequency, duration, and exposure route of chemicals to humans.

6.1.2.1 Exposure Scenarios. Only those exposure pathways deemed to be complete, or where a plausible route of exposure can be demonstrated from the site to an individual, were quantitatively evaluated in the risk assessment. The populations at risk because of the waste exposures at TAN were identified by considering both the current and future land-use scenarios.

The residential scenarios model a person living on the site 350 days a year for 30 years, beginning in 2097 (100 years from 1997). The 100-year residential scenario was selected for analysis because the INEEL institutional controls are currently expected to last for at least 100 years. For purposes of the HHRA, the assumption was made that future residents will construct 3-m (10-ft) basements beneath their homes; therefore, they could be exposed to contaminants by the spreading of the excavated material around the perimeter of the house.

The occupational scenarios model nonintrusive daily industrial use without restrictions. The occupational scenarios were current and future. The current occupational scenario that was analyzed lasts for 25 years from the present. The future occupational scenario starts in 2097 (100 years from 1997) and lasts 25 years.

6.1.2.2 Quantification of Exposure. The following exposure pathways were considered applicable to the evaluation of human exposure to contaminants at the TAN sites: ingestion of soil, inhalation of fugitive dust, inhalation of volatiles, external radiation exposure, groundwater ingestion (residential scenario only), ingestion of homegrown produce (residential scenario only), dermal absorption of contaminants in groundwater (residential scenario only), and inhalation of volatiles from indoor use of groundwater (residential use only). Dermal absorption risks and hazard quotients (HQs) for organic contaminants contained in WAG 1 soils were calculated at all of the retained release sites evaluated in the HHRA. It was determined that dermal exposure did not contribute significantly to the risk based on these calculations and the knowledge that the predominant COPCs at TAN (i.e., radionuclides) are not dermally absorbed to any great extent.

Adult exposures were evaluated for all scenarios and pathways (external exposure, inhalation of dust, and ingestion of soil, groundwater, and foods); child exposures (0 to 6 years old) were considered separately only for the soils ingestion pathways in the residential scenarios. Children were included because children ingest more soil than adults, significantly increasing the exposure rate.

The exposure parameters used in the risk assessment were obtained from EPA and DOE guidance and are concurred upon by the Idaho Department of Health and Welfare (IDHW). The exposure parameter default values used in the risk assessment are designed to estimate the reasonable maximum exposure at a site. Use of this approach makes underestimation of the potential adverse health effects highly unlikely. The exposure parameters used in the risk assessment can be found in Section 6 of the RI/FS Report.

The contaminant exposure point concentrations evaluated in the HHRA were developed from site-specific sampling information. Ninety-five percent upper confidence level (UCL) of the mean concentrations were calculated from these sampling data, and either the 95% UCL or maximum detected concentration at a given site, was used as the exposure point concentration in the site's risk calculations. This analysis method was also designed to produce reasonable maximum exposure estimates for the WAG. Exposure concentrations associated with each COPC were estimated for groundwater, air, and soil.

The depths of contamination evaluated for the exposure routes discussed in the following sections, were based on guidance given in the *INEL Track-2 Investigation Manual* (INEL 1994). Specifically, contaminant concentrations were based on the 95% UCL on the mean concentrations (or maximum concentration if the maximum was less than the 95% UCL) of samples collected over the following depth ranges:

Depth	Exposure Route(s)
0 to 0.2 m (0 to 6 in.)	Occupational scenario: soil ingestion, inhalation of fugitive dust, inhalation of volatiles.
0 to 1.2 m (0 to 4 ft)	Occupational scenario: external radiation exposure.
0 to 3 m (0 to10 ft)	Residential scenario: all soil pathway and air pathway exposure routes.
All sample results are included, regardless of depth	Residential scenario: all groundwater pathway exposure routes.

In the exposure point concentration calculations, the only form of contaminant decay considered was radioactive decay (i.e., nonradionuclides are assumed to persist indefinitely in the environment). Radioactive decay was accounted for by estimating radionuclide concentrations at the start of a given exposure scenario, and then calculating the average concentrations that will exist during the length of the scenario. For example, the concentration of a given radionuclide analyzed in the current occupational exposure scenario is the average concentration that would exist between 0 and 25 years in the future, and the concentration analyzed in the 100-year future residential scenario is the concentration that would exist from 100 to 130 years. The effects of radioactive progeny were only considered by using "+D" slope factors in the radionuclide risk calculations (see Section 6.5 of the RI/FS Report). Decay and ingrowth calculations were not performed for complete radionuclide decay chains. The use of "+D" slope factors account for risks produced by daughter, products that are in secular equilibrium with their parent radionuclides (EPA 1994).

6.1.3 Toxicity Assessment

A toxicity assessment was conducted to identify potential adverse effects to humans from contaminants at TAN. A toxicity value is the numerical expression of the substance dose-response relationship used in the risk assessment. Toxicity values (slope factors and reference doses) for the sites were obtained from EPA's "Integrated Risk Information System" database and EPA's "Health Effects Assessment Summary Tables: Annual FY-94." The toxicity values used in the BRA are presented in Appendix B of the RI/FS Report.

6.1.4 Human Health Risk Characterization

Excess lifetime cancer risks are estimated by multiplying the intake level, developed using the exposure assumptions, by the slope factor. An excess lifetime cancer risk of 1 in 1,000,000 (plausible upper bound) indicates that an individual has a one in one million chance of developing cancer over a lifetime as a result of site-related exposure to a carcinogen under the specific exposure conditions at a site. Excess cancer risks estimated below 1 in 1,000,000 typically indicate that "No Action" is appropriate. Risks estimated in the range of 1 in 10,000 to 1 in 1,000,000 indicate that further investigation or remediation may be needed, and risks estimated above the 1 in 10,000 typically indicate that further action is appropriate. However, the upper boundary of the risk range is not a discrete line at 1 in 10,000, although EPA generally uses 1 in 10,000 in making risk management decisions. A specific risk estimate around 1 in 10,000 may be considered acceptable if justified based on site-specific conditions. For the sites covered by this ROD, risks greater than 1 in 10,000 with a complete exposure pathway have been identified to require remedial action and sites with a risk greater than 1 in 10,000 that will decay to acceptable levels within the 100 years of DOE control of the INEEL, are classified as "No Further Action." Sites with risks less than or equal to 1 in 10,000 are "No Action" sites. "No Further Action" sites will require institutional controls for protection of human health. The sites requiring institutional controls, with additional information, are presented in Section 12 of this ROD.

The estimates of risks to human health are summarized in Sections 7, 8, and 9 of this ROD and presented in more detail in Appendix B of the RI/FS Report.

6.1.5 Human Health Risk Uncertainty

Many of the parameter uncertainty values used to calculate risks in the WAG 1 HHRA were uncertain. For example, limitations in site sampling produced some uncertainty associated with the extent of contamination at most of the WAG 1 sites. Limitations in the characterization of the WAG 1 physical environment produced some uncertainty associated with fate and transport properties of WAG 1 contaminants. To offset these uncertainties, parameter values were selected for use in the HHRA so that the results of risk assessment would present an upper bound, yet reasonable estimate of WAG 1 risks. Assumptions and supporting rationale, along with potential impacts on the uncertainty, are discussed in Section 6.6 of the RI/FS Report.

6.2 Ecological Risk Assessment

The ERA of WAG 1 was a qualitative evaluation of the potential effects of the sites on plants and animals, other than people, and domesticated species. A quantitative ERA is planned in conjunction with the INEEL-wide WAG 10 comprehensive RI/FS scheduled for 2002. This INEEL-wide ERA will provide an indication of the affect of INEEL releases in the ecology at a Site-wide level. There are no critical or sensitive habitats on or near TAN. Based on the present contaminant and ecological information and the qualitative ERA performed for this ROD, the remedies selected to address human health risks will serve to reduce the ecological risk posed at five sites where both human health and potential ecological risk have been identified. The need for remedial action will be reconsidered at these sites if the INEEL-wide ERA identifies an ecological risk.

6.2.1 Species of Concern

The only federally listed endangered species known to frequent the INEEL is the peregrine falcon. The bald eagle is known to frequent the INEEL; however, the status of the bald eagle in the lower 48 United States was changed from endangered to threatened in July 1995. Several other species observed on the INEEL are the focus of varying levels of concern by either federal or state agencies. Animal and avian species include the ferruginous hawk, northern goshawk, sharp-tailed grouse, loggerhead shrike, Townsend's big-eared bat, pygmy rabbit, gyrfalcon, boreal owl, flammulated owl, Swanson's hawk, merlin, and burrowing owl. Plant species classified as sensitive include Lemhi milkvetch, plains milkvetch, wing-seed evening primrose, nipple cactus, and oxytheca.

6.2.2 Exposure Assessment

Three primary media were identified to have the potential for posing risk to WAG 1 ecological components: (1) contaminated surface soil, (2) contaminated subsurface soil, and (3) contaminated surface water. Ingestion of contaminated groundwater was not considered because groundwater is not accessible to ecological receptors. For plants, the uptake of contaminants through the root systems was considered.

The amount of exposure is directly related to the amount of time spent and the fraction of diet taken on the sites. Therefore, exposures are greatest for permanent ecological residents, particularly plants and small burrowing animals. The small size of the sites of concern at WAG 1 is expected to minimize the exposures received by migratory species, which include most avian and large mammal species that inhabit the INEEL.

6.2.3 Ecological Risk Evaluation

A summary of the results of the ERA is presented in the RI/FS Report (Section 8). A basic assumption of the ERA was that, under a future-use scenario, the contamination is present at an abandoned site that will not be institutionally controlled. In actuality, co-located facilities are currently in use, and institutional controls will remain in place until they are decommissioned. Because these sites are at an industrial facility that is currently in use, they most likely do not contain desirable or valuable habitat. The absence of habitat and the existence of facility activities will minimize the exposure of ecological receptors.

6.2.4 Ecological Risk Uncertainty

Uncertainty is inherent in the risk process. Principal sources of uncertainty lie within the development of an exposure assessment. Uncertainties inherent in the exposure assessment are associated with estimation of receptor ingestion rates, selection of acceptable HQs, estimation of site usage, and estimation of plant uptake factors and bioaccumulation factors. Additional uncertainties are associated with the depiction of site characteristics, the determination of the nature and extent of contamination, and the derivation of threshold limit values. All of these uncertainties likely influence risk.

It is important to reiterate that it was anticipated that the conservative nature of the ERA at the WAG level would result in many sites and contaminants being indicative of potentially unacceptable risk to ecological receptors. This is due to the exposure calculations using a very conservative approach and is also compounded by the methods used to determine extent of contamination and characterize exposure concentrations at each release site.

Because of these considerations, the relative small size of the sites, and the conservatism of the ERA, no significant ecological impact is anticipated from these sites. The need for remedial action at sites posing a potentially unacceptable ecological risk at a population level will be reconsidered if the INEEL-wide WAG 10 ERA identifies an ecological risk.

6.2.5 INEEL-Wide Ecological Risk Assessment

The ecological hazard index numbers presented in Sections 7, 8, and 9 of this ROD are based on preliminary screening. A hazard index above 10 would require a remedial action decision by the WAG. However, a hazard index above 1 but less than 10 will be further evaluated in the WAG 10 comprehensive investigation and subsequent documentation. There were no sites with an ecological hazard index above 10 identified in the OU 1-10 RI/FS. Those sites with hazard indices greater than 1 (but less than 10) will be addressed by WAG 10.

6.3 Groundwater Fate and Transport

Waste Area Group 1 includes two potential sources of groundwater contamination: (1) contaminants injected into the aquifer by the TSF-05 Injection Well and (2) contaminants that could leach from surface and near surface soils. Groundwater contamination produced by the TSF-05 Injection Well was evaluated as part of the OU 1-07B action. Contamination that could leach into the SRPA from surface and near surface soil was evaluated in the OU 1 -10 BRA (Section 6 of the RI/FS).

Contamination resulting from contaminants injected into the aquifer through the TSF-05 injection well is being addressed under the OU 1-07B groundwater remediation ROD. The OU 1-07B ROD was signed August 1995. According to that ROD, the contaminants of concern (COCs) in the TSF-05

contaminant plume are trichloroethylene, tetrachloroethylene, 1,2-dichloroethylene, Cs-137, H-3, Sr-90, and U-234. The selected remedy in that ROD will reduce the plume's trichloroethylene concentration to 5 µg/L, tetrachloroethylene to 5 µg/L, 1,2-dichloroethylene to 70 µg/L, Cs-137 to 119 pCi/L (proposed MCL), H-3 to 20,000 pCi/L (MCL), Sr-90 to 8 pCi/L (MCL), and U-234 to 30 pCi/L (proposed MCL) by the beginning of the 100-year residential scenario. The OU 1-10 BRA assumed that the OU 1-07B remediation will be successful. Therefore, only risks from the contaminants that could leach from the near surface soil were evaluated.

Groundwater concentrations resulting from surface and near surface sources were estimated in the BRA using the computer code GWSCREEN. The input parameters for the GWSCREEN model are presented in Appendix B of the RI/FS Report. Tables B-45 and B-46a in Appendix B of the RI/FS Report summarize the results of the GWSCREEN runs, and Appendix C of the RI/FS Report contains the GWSCREEN output files for each COPC. Because the retained site sources are combined for the GWSCREEN modeling, the output concentrations are not projected to occur at any specific point beneath WAG 1. The GWSCREEN results are assumed to be conservative estimates of the maximum groundwater concentrations that could hypothetically occur at any point beneath the WAG during the residential exposure scenario and do not exceed the 1 in 10,000 risk. In addition, groundwater concentrations are not expected to exceed MCLs based on the results of GWSCREEN results resulting from surface and near surface sources.

The contaminant concentrations calculated using GWSCREEN are expected to overestimate the true aquifer concentrations that will be produced by infiltration of contaminants at WAG 1. Because of the complexity of the subsurface beneath WAG 1 and limited information about factors that influence flow and transport of contaminants in groundwater, the uncertainty about potential contaminant concentrations associated with the groundwater pathway exposure routes is greater than the uncertainty associated with any other exposure pathway in the BRA. To compensate for this relatively large uncertainty, conservative assumptions are used throughout the groundwater pathway analysis. These assumptions can be found in Section 6.3.3.4 of the RI/FS Report.

The only source of perched water known to exist at WAG 1 lies beneath the TSF-07 Disposal Pond (see Section 4.1.10 of the RI/FS Report). The perched water body is present because of continuing water disposal in the TSF-07 Pond. These disposals will be discontinued before the end of the 100-year INEEL institutional control period. Once the water disposals are discontinued, the perched water body is expected to subsequently dissipate. Risks from ingestion of water taken from the TSF-07 perched water body were not calculated in the BRA for this reason. First, the water body is present as a result of water disposals to the TSF-07 Pond. It is unlikely that anyone will be able to drill a drinking water well into the perched water body, Second, the TSF-07 perched water body is relatively small, so it is unlikely that the body could produce enough water to support a residence over an extended period of time. Third, the TSF-07 Disposal Pond is permitted for land application of wastewater with the State of Idaho.

6.4 Basis for Response

Eight sites within OU 1-10 have actual or threatened releases of hazardous substances, which if not addressed, may pose an imminent and substantial endangerment to human health and the environment. The response actions selected in this ROD are designed to reduce the potential threats to human health and the environment. A summary of the release sites addressed in the OU 1-10 FS, including the eight remedial action sites, their COCs, range of detected concentrations, final remediation goals (FRGs), exposure pathways, risks, and hazard indices are listed in Table 6-1.

Table 6-1. Summary of release sites and COCs addressed in the OU 1-10 feasibility study.

Site Code	Description	COCs	Range of Detected Concentrations (mg/kg or pCi/g)	Final Remediation Goal for COC (mg/kg or pCi/g)	Exposure Pathway	Current Occupational Risks (Total/COC)	Future Occupational Risks (Total/COC)	Future Residential Risks (Total/COC)	Future Residential Hazard Index (Total/COC)
TSF-09/18	V-Tanks	Cs-137[a]	ND – 40148.94 ± 60	23.3	External radiation	9E-03/8E-03	8E-04/8E-04	4E-03/4E-03	1E+00/-[b]
TSF-26	PM-2A Tanks	Cs-137[a]	ND – 4400 ± 10.6	23.3	External radiation	1E-02/1E-02	1E-03/1E-03	2E-03/2E-03	1E+00/-[b]
TSF-06[C], Area B	Soil Contamination Area South of the Turntable	Cs-137	48.3±3.49 – 150 ± 10.6	23.3	External radiation	1E-03/1E-03	1E-04/1E-04	3E-04/2E-04	1E+00/-[b]
TSF-07	Disposal Pond	Cs-137	0.0516 ±0.01 –135 ±10	23.3	External radiation	1E-03/5E-04	1E-04/5E-05	8E-04/2E-04	3E+00/-[b]
WRRTF-01	WRRTF Burn Pits I, II, III, and IV	Lead[d]	3 – 2350	400[d]	Ingestion via soil	9E-07/-[e]	1E-07/-[e]	1E-04/-[e]	1E+00/-[f]
TSF-03	TSF Burn Pit	Lead[d]	23.4 –2820	400[d]	Ingestion via soil	-[g]/-[e]	-[g]/-[e]	-[g]/-[e]	–[g]/–[g]
TSF-08	Mercury Spill Area	Mercury	0.4 –73.7	1.9[h]	Ingestion via soil	8E-06/–[e]	8E-07/–[e]	1E-04/–[e]	3E+01/3E+01
WRRTF-13	WRRTF Fuel Leak	Total Petroleum Hydrocarbons	4.6 –35700	-	Ingestion via soil	–[g]/–[g]	–[g]/–[g]	–[g]/–[g]	–[g]/–[g]

ND = not detected

a. COCs identified were for soils surrounding tanks only. The tanks contain radionuclides, heavy metals, polychlorinated biphenyls and organic compound. No risk assessment was performed for the tank contents because the tanks were not incorporated into these sites until the FS stage.

b. A hazard index was not calculated for Cs-137 because it is a carcinogen.

c. Estimated concentration using a portable Nal Scintillameter.

d. Additional COCs may be identified based on results of post-ROD sampling to remedial action of the Burn Pits. The 400 mg/kg FRG for lead is based on EPA's residential screening level.

E. Risk is not calculated for lead or mercury because they are not carcinogens.

F. A hazard index was not calculated for lead because there is no toxicity information available.

G. Risk and a hazard index could not be calculated in the BRA because none of the site's COPCs have toxicity information available.

H. TSF-08 has been selected for a further Treatability study under WAG 10.

I. To be determined during post-ROD sampling in accordance with the State of Idaho Risk-Based Corrective Action Guidance.

6.4.1 Remedial Action Objectives

The RAOs for OU 1-10 were developed in accordance with the NCP and CERCLA RI/FS Guidance. The RAOs were defined through discussions among the Agencies. The RAOs are based on the results of the HHRA and are specific to the COCs and exposure pathways developed for OU 1-10.

The RAOs for the soil pathway include:

- Reduce risk from external radiation exposure from Cs-137 to a total excess cancer risk of less than 1 in 10,000 for the hypothetical resident 100 years in the future and the current and future worker

- Prevent direct exposure to lead at concentrations over 400 mg/kg, the EPA residential screening level for lead

- Prevent exposure to petroleum hydrocarbon constituents in accordance with the State of Idaho Risk-Based Corrective Action (RBCA) Guidance.

The RAOs for the V-Tank and PM-2A Tank contents include:

- Prevent release to the environment of the V-Tank and PM-2A Tank contents.

To meet these RAOs, FRGs as identified in Table 6-1 were established. The objective of the FRGs are to ensure a risk-based protectiveness of human health and the environment by providing unrestricted land use in 100 years. These goals are quantitative cleanup levels based primarily on applicable or relevant and appropriate requirements (ARARs) and risk-based doses. The FRGs are used in the remedial action planning and assessment of effectiveness of remedial alternatives. Because the FRGs are both contaminant- and site-specific, the FRGs are presented for each site in Sections 7, 8, and 9.

6.4.2 Remedial Alternative Development

In accordance with Section 121 of CERCLA, the FS should identify remedial alternatives that achieve the stated RAOs, provide overall protection of human health and the environment, meet the ARARs, and are cost-effective. These alternatives, used individually or in combination, can satisfy the RAO through reduction of contaminant levels, volume or toxicity, or by isolation of contaminants from potential exposure and migration pathways.

In the RI/FS, treatment technologies for the eight retained release sites were identified and remedial alternatives (i.e., combinations of technologies) were developed for evaluation. Alternatives were developed for each of the contaminated media types and applied on a site-specific basis.

Details of the technologies considered and the alternative development process are included in Sections 10 and 11 of the RI/FS Report and in Sections 7, 8, and 9 of this ROD. The alternatives and combinations of alternatives were developed using experience from previous cleanups at other INEEL sites with similar characteristics. The NCP requires that a “No Action” alternative be evaluated as a baseline. However, because the “No Action” alternative would not meet the threshold criteria of compliance with ARARs and overall protection of human health and the environment, it was not considered further as a viable alternative.

6.4.2.1 Evaluation Criteria. The detailed analysis performed as part of the RI/FS provided an evaluation of candidate alternatives with respect to the nine evaluation criteria specified in 40 Code of Federal Regulations (CFR) 300.430(e)(9)(iii). The nine evaluation criteria are grouped in three categories: (1) threshold criteria that relate directly to statutory findings and must be satisfied by each selected alternative, (2) balancing criteria used to refine the selection of candidate alternatives for the site by evaluating their effectiveness, implementability, and cost, and (3) modifying criteria that measure the acceptability of the alternatives to state agencies and the community. The evaluation criteria are:

1. *Overall protection of human health and the environment* addresses whether a remedy provides adequate protection of human health and the environment, and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. *Compliance with ARARs* addresses whether a remedy will meet all of the ARARs under federal and state environmental laws and/or justifies a waiver.

3. *Long-term effectiveness and permanence* refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

4. *Reduction of toxicity, mobility, or volume through treatment* addresses the degree to which a remedy employs recycling or treatment that reduces the toxicity, mobility, or volume of the COCs, including how treatment is used to address the principal risks posed by the site.

5. *Short-term effectiveness* addresses any adverse impacts on human health and the environment that may be posed during the construction and implementation period, and the period of time needed to achieve cleanup goals.

6. *Implementability* addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. *Cost* includes estimated capital and operation costs, expressed as net present-worth costs.

8. *State acceptance* reflects aspects of the preferred alternative and other alternatives that the state favors or objects to and any specific comments regarding state ARARs or the proposed use of waivers.

9. *Community acceptance* summarizes the public's general response to the alternatives described in the Proposed Plan and in the RI/FS, based on public comments received.

These nine evaluation criteria form the basis for conducting the detailed analysis. The analysis presented sufficient information to allow the Agencies to select an appropriate remedy for each of the nine sites. Evaluation against the nine criteria is the basis for determining the ability of a remedial action alternative to satisfy CERCLA remedy selection requirements.

6.4.2.2 Detailed Analysis of Alternatives. The detailed analysis included an assessment of each alternative individually against each of the evaluation criteria. The evaluation criteria are addressed in terms of threshold, balancing, and modifying factors. Results of the individual analysis are then used in a comparative analysis identifying advantages and disadvantages of the alternatives relative to one another.

7. TANK SITES

Remedial action is required for three tank sites: the V-Tanks sites (TSF-09 and TSF-18) and the PM-2A Tanks site (TSF-26), herein referred to as the V-Tanks and PM-2A Tanks. Releases at these sites may pose an imminent and substantial endangerment to human health and the environment. The site characteristics including the nature and extent of contamination, summary of site risks, remedial action alternatives, and the selected remedy are presented for these sites. More detailed information about the tank sites can be found in the OU 1-10 RI/FS Report (DOE-ID 1997b).

7.1 V-Tanks

The two V-Tanks sites (TSF-09 and TSF-18) have similar attributes and are located in the same area (Figure 7-1). Because of the similarities between the two sites, they were evaluated together.

The V-Tank site, TSF-09, includes three abandoned 37,850-L (10,000-gal) underground storage tanks (USTs), the contents of the tanks, and the surrounding contaminated soil. The tanks are approximately 3 m (10 ft) below ground surface (bgs). Two of the tanks each contain approximately 4,542 L (1,200 gal) of liquid and between 1,703 and 2,081 L (450 and 550 gal) of sludge. The third tank contains approximately 22,712 L (6,000 gal) of liquid and 2,574 L (680 gal) of sludge. The TSF-09 CERCLA site does include ancillary piping in the immediate vicinity of the tanks.

The V-Tank site, TSF-18, includes an abandoned 1,514-L (400-gal) UST, a sand filter, the tank contents, and the surrounding soil. The tank is approximately 2 m (7 ft) bgs. The tank contains approximately 416 L (110 gal) of liquid and 94 L (25 gal) of sludge. The TSF-18 CERCLA site does include ancillary piping in the immediate vicinity of the tank and sand filter.

The tanks were installed in the early 1950s as part of a system designed to collect and treat radioactive liquid effluents from TAN operations. The soil is contaminated with Cs-l37 by spills when waste was transferred to and from the tanks. The tank contents are contaminated with radionuclides, heavy metals, organic compounds, and polychlorinated biphenyls (PCBs). Contamination has been detected throughout the 15.2- by 24.4-m (50- by 80-ft) area and to a depth of 14 m (47 ft).

Currently, the V-Tanks are administratively controlled. The sites are fenced and posted with signs that identify them as CERCLA sites. No activities can be performed at the sites without contacting the INEEL Environmental Restoration Program, and entry into the sites requires radiological control precautions. The purpose 6f these controls is to keep worker exposures as low as reasonably achievable (ALARA), and to prevent the spread of contaminated soil. The controls reduce current and future occupational exposure at the sites to acceptable levels.

7.1.1 Summary of Site Risks

A HHRA and an ERA were conducted for the two V-Tanks. The results of the assessments indicate that this site may present an imminent and substantial endangerment to human health and the environment, and are summarized in Table 7-1. A more detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the V-Tanks HHRA and ERA is presented in Sections 6 and 7 of the OU 1-10 RI/FS Report.

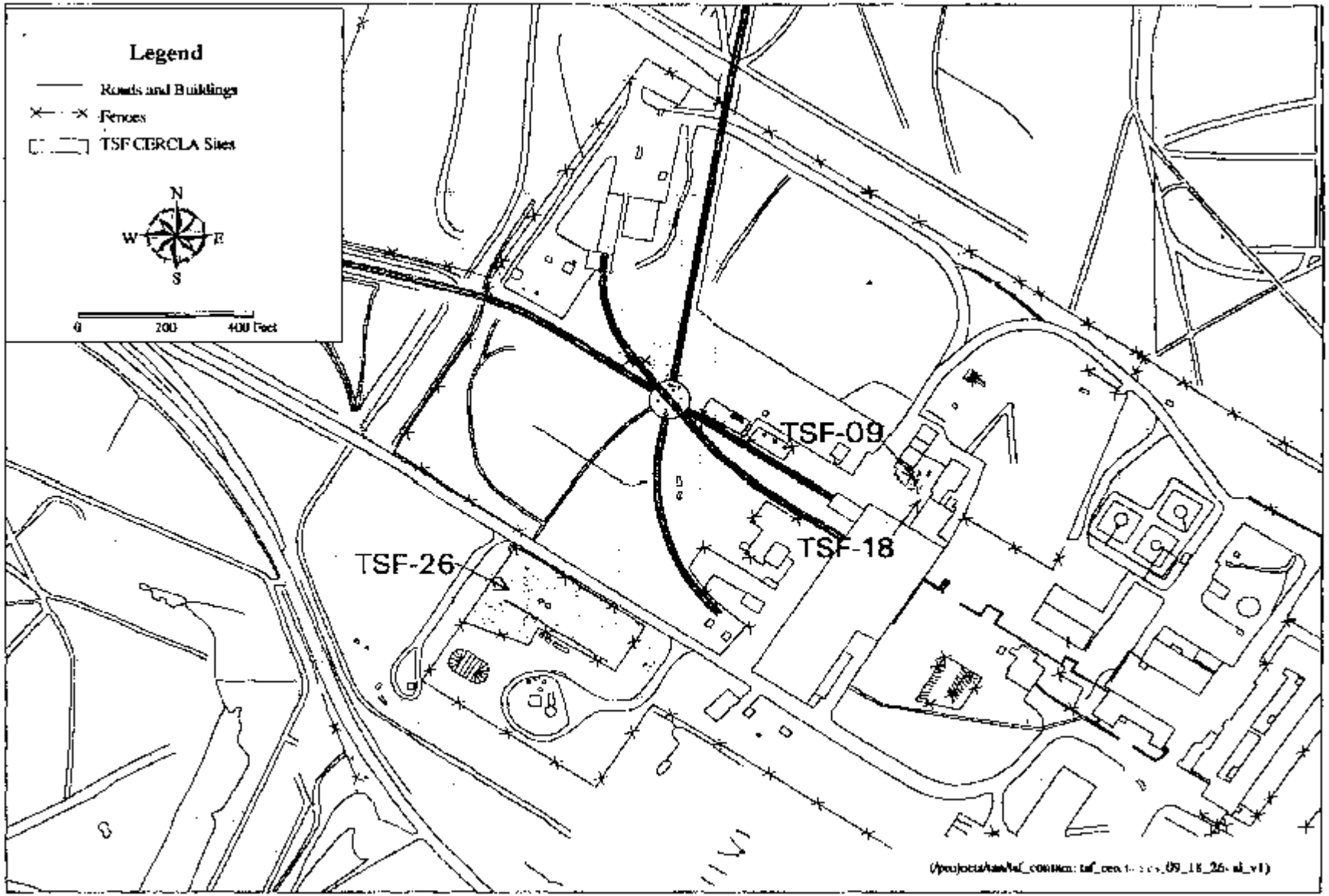


Figure 7-1. Tank sites.

Table 7-1. Summary of risk estimates for the V-Tanks soil.

Scenario	Total Cancer Risk	Total Hazard Index
Occupational	8 in 10,000	0.00001
Residential	4 in 1,000	1

7.1.1.1 Human Health Risks. The exposure route and the associated COCs that produce calculated risks greater than or equal to 1 in 10,000 at the V-Tanks include external radiation exposure of current workers by Cs-137 and Co-60, and external radiation exposure of future workers and residents by Cs-137 from surface and subsurface soil.

7.1.1.2 Ecological Risk Assessment. The soil at the V-Tanks was identified in the ERA as having an ecological risk (i.e., the hazard index [HI]) less than the threshold level of 1 and is considered not to pose an unacceptable threat to ecological receptors. No further ERA will be performed at this site.

7.1.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS identified and evaluated remediation alternatives. Any selected alternative had to achieve the remediation goal of 23.3 pCi/g for Cs-137. The Cs-137 FRG of 23.3 pCi/g is a risk-based remediation goal that ensures protectiveness of human health and the environment. This FRG will provide unrestricted land use in 100 years. The principal ARARs evaluated for the V-Tanks during alternative evaluation were the Hazardous Waste Management Act closure requirements, RCRA treatment and disposal requirements, and PCB disposal criteria. In addition to the "No Action" alternative, three alternatives were evaluated to remediate the V-Tanks:

- Alternative 2: Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal
- Alternative 3: Soil Excavation and Disposal, In Situ Stabilization of Tank Contents
- Alternative 4: In Situ Vitrification.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS Report.

7.1.2.1 Alternative 2: Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal. Under Alternative 2, a temporary structure to protect workers and the environment would be built over the tank sites. The soil would be excavated, the tank contents removed, and the tanks decontaminated. The tanks would be excavated and disposed, and the excavated areas would be backfilled with clean soil.

Alternative 2 includes two variations differing in whether treatment is within the boundaries of the INEEL or off the INEEL. Treatment within the boundaries of the INEEL would consist of storing the tank waste at the INEEL followed by treatment at a facility approved for treatment of RCRA and Toxic Substances Control Act (TSCA) mixed waste. Off-Site treatment would involve primarily the same process as on-Site, but the tank contents would be shipped off-Site to an approved treatment facility. The cost for this alternative is $8.9 million.

Both variations of Alternative 2 would accomplish the site RAOs in a short timeframe because the contamination and tank contents would be permanently removed.

Both variations of Alternative 2 would protect human health and the environment and would comply with the applicable regulations. Under both variations, the thermal treatment would reduce the toxicity, mobility, and volume of the contamination and be effective long-term because the contamination would be removed. The short-term effectiveness of Alternative 2 would be moderate, because it would require operator attendance and maintenance, increasing the potential for worker exposure. In addition, the alternative would require transportation of contaminants to the treatment facility. Implementability for both variations would be moderate since approved treatment facilities have been permitted and under construction to treat this type of waste.

7.1.2.2 Alternative 3: Soil Extraction and Disposal, In Situ Stabilization of Tank Contents. Alternative 3 would involve building a temporary containment structure, excavating and disposing of the contaminated soil at an acceptable repository, and stabilizing the tank contents in place. The excavated areas would be backfilled with clean soil. Alternative 3 includes two variations, differing in the disposal location—on the INEEL (Alternative 3a) or off the INEEL (Alternative 3b)—for the excavated soil. Because contaminants would be left in place, institutional controls and long-term monitoring would be required. The costs of these alternatives are $5.0 and $5.8 million, respectively.

Both variations of Alternative 3 would accomplish the site RAOs in a short timeframe because the tank contents would be stabilized to prevent releases to the environment. To accomplish the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use.

Both variations of Alternative 3 would protect human health and the environment. However, the IDHW has determined, after the release of the Proposed Plan, that the V-Tanks are part of a tank system and are subject to State of Idaho HWMA closure requirements. Based on this information, In Situ Stabilization does not meet ARARs since this technology will not meet the LDR ARARs. The combination of high levels of organic compounds and heavy metals may make it difficult to implement; hence implementability and long-term effectiveness would be uncertain. Both Alternative 3 variations would reduce the mobility of the contamination. Solidification could result in an increased volume of the contaminated materials. Neither variation would reduce toxicity unless pretreatment to destroy organic compounds and PCBs were performed, which would be difficult to accomplish in situ.

7.1.2.3 Alternative 4: In Situ Vitrification. Alternative 4 would involve in situ vitrification (ISV) of the tanks, their contents, and the surrounding soil. Contaminated soil not treated by ISV would be excavated and disposed at an approved facility such as the INEEL CERCLA Disposal Facility (ICDF). An electrical current would be used to melt the tanks, contents, and all contaminated soil around the tanks, which would then solidify into a glass-like material. The organic compounds, including PCBs, would be destroyed by the process. The heavy metals and radionuclides would still represent, but would be bound up in the glassy solid. Organic compounds and particulates released during the process would be captured and treated in an off-gas treatment system. A RCRA compliant cover and long-term monitoring are included as part of this remedy. The cost for this alternative is $15.9 million,

Alternative 4 would accomplish the site RAOs in a short timeframe since the contaminated soil and tank contents would be vitrified, which precludes release of contaminates to the environment. To accomplish the RAOs, long-term institutional controls and monitoring of the vitrified waste must be implemented to protect future occupational and residential land use.

Alternative 4 would protect human health and the environment and comply with the applicable regulations. In situ vitrification would reduce toxicity by destroying the organic compounds and PCBs. Mobility of the radionuclides and heavy metals would be reduced by dispersing them throughout and binding them into the glass-like solid. Short-term effectiveness of this alternative would be moderate. It

would have the least potential for worker exposure to contaminants because the tank contents would not be directly contacted.

Following ISV, tests would be conducted to determine whether the process was successful in destroying organic compounds and PCBs, and completely immobilizing metals and radionuclides. Implementability and long-term effectiveness, therefore, are both ranked moderate.

7.1.3 Summary of Comparative Analysis of Alternatives

The nine CERCLA evaluation criteria specified in 40 CFR 300.430(e)(9)(iii) are grouped in three categories: (1) threshold criteria that relate directly to statutory findings and must be satisfied by each selected alternative, (2) balancing criteria used to refine the selection of candidate alternatives for the site by evaluating their effectiveness, implementability, and cost, and (3) modifying criteria that measure the acceptability of the alternatives to state agencies and the community. The following sections summarize the evaluation of the candidate remedial alternatives according to these criteria. Detailed comparative analyses can be found in Section
12 of the RI/FS Report.

7.1.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment, and compliance with ARARs. Alternatives 2a3, 2b, and meet both threshold criteria.

7.1.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost.

Alternative 2 best satisfies the criterion of long-term effectiveness because all contamination would be removed. Alternative 4 partially satisfies the long-term effectiveness criteria; additional studies would be needed to determine the destruction of organic compounds, PCBs, heavy metals, and radionuclides. Reduction of toxicity, mobility, or volume through treatment is best achieved by Alternatives 2 and 4. Alternative 2 uses treatment to reduce the waste toxicity, volume, and mobility. Alternative 4 would reduce the toxicity by destroying the organic compounds and PCBs, and reduce the mobility of the radionuclides and heavy metals by binding them into the glass-like solid. None of the alternatives would reduce toxicity of radionuclides. Short-term effectiveness is partially satisfied by Alternatives 2 and 4 due to the possibility of worker exposure to the waste. Alternative 4 partially satisfies the implementability criteria because additional studies would be needed to determine the destruction of organic compounds, PCBs, heavy metals, and radionuclides. Implementability is partially satisfied by Alternative 2 because treatment facilities have recently come online to accept the waste. Alternative 2 has the lowest estimated cost and Alternative 4 has the highest estimated cost.

7.1.3.3 Modifying Criteria. The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by the IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved in the development and review of the RI/FS Report (DOE-ID 1997b), the Proposed Plans (DOE-ID 1998a and DOE-ID 1998b), the FS Supplement (DOE-ID 1998c), this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Generally, the selected remedy is supported. The Responsiveness Summary (Part III) portion of this ROD documents the full range and content of the public comments received regarding the action at this site.

7.1.4 Selected Remedy: Alternative 2, Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal.

Based on CERCLA requirement considerations, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 2, Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal. The selected remedy will satisfy the NCP by using treatment to address the principal threat waste posed by the V-Tank contents. The major components of the selected remedy for the V-Tanks include:

- Excavating contaminated soil
- Disposing the contaminated soil at an acceptable soil repository
- Sampling tank contents
- Removing tank contents and placing the contents into U.S. Department of Transportation (DOT) approved containers
- Transportation of the tank contents and other investigation-derived waste (IDW) to an off-Site treatment facility
- Treatment of tank contents and IDW at an approved RCRA and TSCA mixed waste treatment facility
- Disposing of treated tank contents and IDW at the ICDF, other acceptable facility, or the Waste Isolation Pilot Plan (WIPP)
- Decontamination of the tanks and removing the tanks for disposal
- Post-remediation soil sampling at the bottom of the excavation to verify FRGs are met and analyze for additional contaminants in the V-Tank content waste to perform a risk analysis in support of an institutional control determination at this site
- Filling the excavated area with clean soil, then contouring and grading to surrounding soil
- Institutional controls consisting of signs, access control, and land-use restrictions may be established and maintained, depending on the results of post-remediation sampling.

The selected remedy addresses the risks posed by the V-Tanks by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed.

Modifications to the excavation equipment will be made as needed to provide shielding (e.g., lead windows and lead shielding on exterior-facing surfaces) and personal exposure protection (e.g., supplied air, positive-pressure ventilation systems, and high-efficiency particulate air [HEPA] filters). The following paragraphs detail the selected remedy.

Contaminated soil that is above the FRG of 23.3 pCi/g for Cs-137 will be removed to the bottom of the V-Tanks and will be packaged and disposed of at an acceptable soil repository. All debris (piping, IDW, etc.) will be disposed of in the same manner. The actual disposal location, which could be the proposed ICDF, or another facility on or off the INEEL, will be determined during remedial design following implementation of the ROD. Selection of the ICDF for disposal of TAN materials depends at least in part on the timeframe associated with operation of the facility (scheduled for receiving waste the Year 2005) and its waste acceptance criteria.

When the top of the tanks have been exposed the liquid in the tanks will be pumped into DOT approved containers for shipment to the treatment facility. Pumping of the tanks may include agitating the contents to homogenize the liquid and sludge layers, and adding combustible absorbent to meet treatment facility waste acceptance criteria.

The treatment facility will treat tank contents for PCBs, volatile and semivolatile organic compounds, and heavy metals and will reduce the volume of the waste. The treated residue will remain as a mixed waste and will be shipped back to the INEEL for storage pending final disposal at an approved disposal facility.

After the tank contents have been removed, the tank will be decontaminated. The tanks will be cut up and the scrap metal will be dispositioned appropriately.

Once the tanks and auxiliary equipment in the immediate area have been removed, samples will be collected and analyzed for contaminants identified in the V-Tank content waste from the bottom of the excavation to determine if institutional controls will be required based on risk. Once these samples have been collected, the site will be filled with clean fill material and contoured to surrounding areas.

Additional institutional controls may be required based on the contamination remaining onsite after completion of the remedial action. Evaluation and determination of these institutional controls will be documented in the OU 1-10 Institutional Controls Plan.

It needs to be noted that if implementation of this selected remedy have not been achieved within 5 years from the signature of this ROD, the Agencies will reevaluate the selected remedy at this site. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

7.1.4.1 Estimated Cost for the Selected Remedy. The estimated capital and maintenance cost for implementing the selected remedy for the V-Tanks is $8,893,348. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives while factoring in inflation. The costs of this alternative were revised because of new information and changes in assumptions since the RI/FS Report was prepared. Details of the cost estimates will be submitted to the Administrative Record and are summarized in Table 7-2; an explanation for the change in costs is provided in Section 11.

7.1.4.2 Protection of Human Health and the Environment. The primary measure of the criterion of providing overall protection of human health and the environment is the ability of an alternative to achieve RAOs. Preventing contamination exposure to a hypothetical future occupational worker and a hypothetical future resident is key to meeting RAOs and maintaining risk below acceptable levels.

Table 7-2. Cost estimate summary for the V-Tanks (TSF-09 and TSF-18) selected remedy.

		$ Fiscal Year (FY)-99
FFA/CO Management and Oversight		
	WAG 1 – Management	425,556
Remediation Oversight		
	Construction Oversight/Project Management	1,090,087
	Remediation Action Document Preparation	88,602
	Remedial Action Report	30,720
	Packaging, Shipping, Transportation Documentation	37,463
	WAG-Wide Remedial Action 5-Year Review	37,105
Remedial Design		
	Title Design Construction Document Package	214,300
	Remedial Design Documentation per WAG 1 Baseline	91,931
	Site Characterization	44,000
	Prefinal Inspection Report	7,500
Remedial Action		
	Site Preparation Labor and Equipment	1,191,000
	Soil and Tank Content Removal	366,500
	Tank and Piping System Preparation, Sizing, Disposal, and Backfilling	323,425
	Tank Content Preparation for Transport and Off-site Treatment	494,415
	Site Cleanup and Demobilization Activities	112,500
	Subcontractor Indirect Costs, Procurement Fees, and General and Administrative (G&A)	1,910,661
	Support Labor and Materials	225,850
	Transport and Disposal of Treated Waste at INEEL	173,582
CAPITAL COST SUBTOTAL		6,865,197
	Contingency @ 30%	2,059,559
TOTAL CAPITAL COST IN FY-99 DOLLARS		8,924,757

Table 7-2. (continued).

		$ Fiscal Year (FY)-99
TOTAL CAPITAL COST IN NET PRESENT VALUE		8,046,691
Operations		
	WAG 1 – Management	1,128,949
	WAG 1 RA 5-Year Reviews	360,000
	Site Maintenance	186,250
Decontamination and Dismantlement		N/A
Surveillance and Monitoring		N/A
OPERATION AND MAINTENANCE (O&M) COST SUBTOTAL		1,675,199[a]
	Contingency @ 30%	502,560
TOTAL O&M COST IN FY-99 DOLLARS		2,177,758
TOTAL O&M COST IN NET PRESENT VALUE		846,657
TOTAL PROJECT COST IN NET PRESENT VALUE		8,893,348

a. O&M was calculated using 100 years of maintenance and a discount rate of 5%.

Alternative 2, Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal, would meet the RAOs and, therefore, be effective in protecting human health and the environment. However, in order to reduce the potential for unacceptable exposures to current workers, the existing institutional controls will be maintained until remedial action is completed and confirmation sampling has verified that remedial actions have met the FRG.

7.1.4.3 Compliance with ARARs. The selected remedy meets the identified ARARs. The ARARs, including chemical-specific, action-specific, and to-be-considered (TBC) guidance, for Alternative 2, Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal are shown in Table 7-3.

7.1.4.4 Cost Effectiveness. The selected remedial action is cost-effective because it best satisfies ARARs without requiring waivers from the Agencies and will reduce the volume and mobility of Cs-137. When compared to other potential remedial alternatives, the selected remedy provides the best balance among cost, meeting ARARs, reducing the volume, and eliminating the mobility of Cs-137. The selected remedy will allow unrestricted land use by permanently removing the contamination.

Table 7-3. ARARs for the V-Tanks (TSF-09 and TSF-18) selected remedy.

Category	Citation	Reason	Relevancy[a]
Action Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Toxic Substances" IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before start of construction, controlled, if necessary, and monitored during excavation of soil, removal of the waste and tank system, and decontamination of the tanks and piping.	A
	"Toxic Air Emissions" IDAPA 16.01.01.585 and .586		
	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust during excavation and removal of the tanks and piping.	A
	"Requirements for Portable Equipment" IDAPA 16.01.01.500.02	Portable equipment for removal of the waste, tanks, and piping, and any portable support equipment must be operated to meet state and federal air emissions rules.	A
NESHAPs	"Radionuclide Emissions from DOE Facilities" 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor, and establishes monitoring and compliance requirements.	A
	"Emission Monitoring" 40 CFR 61.93		
	"Emission Compliance" 40 CFR 61.94(a)		
Resource Conservation and Recovery Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A hazardous waste determination (HWD) is required for the waste, tanks, piping, and any secondary waste generated during remediation.	A
	"Manifest" IDAPA 16.01.05.006 (40 CFR 262 Subpart B)	Establishes requirements for transporting hazardous waste to treatment and/or disposal site.	A
	"Pre-Transportation Requirements" IDAPA 16.01.05.006 (40 CFR 262.30 – 262.33)		
RCRA – Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"General Waste Analysis" IDAPA 16.01.05.008 (40 CFR 264.13(a)(1-3))	Analysis requirements apply to the soils, waste, tanks, piping, and secondary waste generated during remediation.	A

Table 7-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	Measures must be taken to restrict access to the site during excavation, removal of the waste, tanks, and piping, and decontamination of the tank and piping.	A
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	Regular inspections must be performed during remediation.	A
	"Personnel Training" IDAPA 16.01.05.008 (40 CFR 264.16)	All personnel involved in soil excavation, removal of the waste, tanks, and piping, and decontamination of the tank and piping, must be trained.	A
	"Preparedness and Prevention" IDAPA 16.01.05.008 (40 CFR 264 Subpart C)	Applies to soil excavation, waste and tank system removal, and decontamination activities.	A
	"Contingency Plan and Emergency Procedures" IDAPA 16.01.05.008 (40 CFR 264 Subpart D)	Applies to soil excavation, waste and tank system removal, and decontamination activities.	A
	"Equipment Decontamination" IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if hazardous waste is contacted.	A
	"Use and Management of Containers" IDAPA 16.01.05.008 (40 CFR 264.171 – 178))	Applicable to the soils, waste, tanks, piping, and any secondary hazardous waste generated remediation that is managed in containers.	A
	"Tank Closure and Post Closure Care" IDAPA 16.01.05.008 (40 CFR 264.197(a))	Applies to the soils, waste, tanks, and piping.	A
RCRA – Land Disposal Restrictions	"Land Disposal Restriction (LDR) Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.40 (a)(b)(e))	The waste, tank, and piping must be treated if necessary, to meet LDR criteria before disposal.	A

Table 7-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Treatment Standards for Hazardous Debris" IDAPA 16.01.05.011 (40 CFR 268.45(a)(b)(c)(d))		A
	"Universal Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.48(a))		A
	"Alternative Treatment Standards for Contaminated Soil" IDAPA 16.01.05.011 (40 CFR 268.49)	Applies to any contaminated soil that is to be removed from the V-Tank and disposed at an approved facility on the INEEL or of the INEEL.	A
	"CERCLA Off-Site Policy" 40 CFR 300.440		A
Toxic Substance Control Act – PCBs	"PCB Remediation Waste : Performance-based Disposal" 40 CFR 761 (b)(1)	The tank waste must be treated or decontaminated to meet PCB disposal criteria. Applies only to the tank waste.	A
	"Decontamination Standards and Procedures : Self-implementing Decontamination Procedures" 40 CFR 761.79(c)(1) and (2)	Applies to decontamination of the tank, piping, and equipment that comes into contact with the tank waste.	A
	"Decontamination solvents" 40 CFR 761.79(d)	Applies to solvents used for decontamination.	A
	"Limitation of exposure and control of releases" 40 CFR 761.79(e)	Applies to all persons who will be conducting decontamination activities of the tank and piping.	A

Table 7-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Decontamination Waste and Residues" 40 CFR 761.79(g)	Applies to the decontamination waste and residuals.	A
TBC			
Radiation Protection of the Public and the Environment	DOE Order 5400.0, Chapter II (1)(a,b)	Order that limits the effective dose to the public from exposure to radiation sources and airborne releases.	
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate.

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

7.2 PM-2A Tank Contents and Contaminated Soils

The PM-2A Tanks site (TSF-26) consists of two abandoned 189,270-L (50,000-gal) UST and the contaminated surface soil around them (see Figure 7-1). The total volume of waste currently in these tanks is 14,500 L (3,800 gal). The tanks are approximately 5m (15 ft) bgs and rest in concrete cradles.

The tanks were installed in the mid-1950s and stored concentrated low-level radioactive waste from the TAN evaporator from 1955 to 1981. The tanks currently contain sludge contaminated with radionuclides, heavy metals, organic compounds, and PCBs. No liquids are present in these tanks because in 1981 the tanks were partially filled with material to absorb free liquid. The soil above the tanks was contaminated by spills containing Cs-137 when waste was transferred from the tanks. Contaminated soil was removed in 1996 as part of an earlier removal action; however, sampling following the removal action indicated an overall area of 30.5 m (100 ft) by 21.3 m (70 ft) to 5.2 m (17 ft) bgs contaminated with Cs-137 that may pose an imminent and substantial endangerment to human health and the environment. The TSF-26 CERCLA site does include ancillary piping and equipment in the immediate vicinity of the tanks.

Currently, the PM-2A site is administratively controlled. The site is fenced and posted with signs that identify it as a CERCLA site. No activities can be performed within the site without contacting the INEEL Environmental Restoration Program, and entry into the site requires radiological control precautions. The purpose of these controls is to keep worker exposures ALARA, and to prevent the spread of contaminated soil. The controls reduce current and future occupational exposure at the sites to acceptable levels.

7.2.1 Summary of Site Risks

A HHRA and an ERA were conducted for the PM-2A Tanks. The results of the assessments indicate that this site may present an imminent and substantial endangerment to human health and the environment, and are summarized in Table 7-4. A more detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the PM-2A Tanks HHRA and ERA is presented in Sections 6 and 7 of the OU 1-10 RI/FS Report.

7.2.1.1 Human Health Risks. The exposure route and the associated COCs that produce calculated risks greater than or equal to 1 in 10,000 at the site include external radiation exposure of current and future workers and hypothetical future residents by Cs-137. The tanks buried at the site contain sludges contaminated with radionuclides. Risks from the sludges were not calculated in the BRA because there is no evidence to indicate that the tanks have leaked. However, the tank contents were included in the FS Evaluation because they may produce unacceptable human health and ecological risks if they were to escape into the environment.

7.2.1.2 Ecological Risk Assessment. The PM-2A Tank soil was identified in the ERA as having an ecological risk (i.e., the HI) less than the threshold level of 1 and is considered not to pose an unacceptable threat to ecological receptors. No further ERA will be performed at this site.

Table 7-4. Summary of risk estimates for PM-2A Tanks.

Scenario	Total Cancer Risk	Total Hazard Index
Occupational	1 in 1,000	0.00001
Residential	2 in 1,000	1

7.2.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS and FS Supplement identified and evaluated remediation alternatives. Any selected alternative had to achieve the remediation goal of 23.3 pCi/g for Cs-137. The Cs-137 FRG of 23.3 pCi/g is a risk-based remediation goal that ensures protectiveness of human health and the environment. This FRG will provide unrestricted land use in 100 years. The principal ARARs evaluated for the V-Tanks were the Hazardous Waste Management Act closure requirements, RCRA treatment and delisting requirements, and PCB disposal criteria. In addition to the "No Action" alternative, four alternatives were evaluated to remediate the PM-2A Tanks:

- Alternative 2: Excavation, Ex Situ Stabilization, and Disposal
- Alternative 3: Soil Excavation, Tank Content Removal, Treatment, and Disposal
- Alternative 4: Soil Excavation and Disposal, In Situ Stabilization of Tank Contents
- Alternative 5: Soil Excavation and Disposal, In Situ Vitrification of Tank Contents.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS Report and the FS Supplement (DOE-ID 1998c).

7.2.2.1 Alternative 2: Excavation, Ex Situ Stabilization, and Disposal. Under Alternative 2, a temporary containment structure would be built over the tank site. The soil would be excavated, the tank contents would be removed and stabilized, and the tanks would be decontaminated and removed. The soil, tank contents, and tanks would then be disposed, either on the INEEL (Alternative 2a) or off the INEEL (Alternative 2b). The excavated areas would be backfilled with clean soil. The cost for these alternatives is $10.0 and $12.8 million, respectively.

Both variations of Alternative 2 would accomplish the site RAOs in a short timeframe because the soil contamination and tank contents would be permanently removed. It is expected that no institutional controls would be required after the remedial action; however, this will be verified by confirmational sampling.

Both variations of Alternative 2 would protect human health and the environment and comply with regulations. In addition, both variations would reduce the mobility of the contaminants through stabilization. Long-term effectiveness would be high because contaminated materials would be removed. However, neither variation would provide a high degree of short-term effectiveness because removing the tanks and tank contents would increase the chance of worker exposure. Implementability of this alternative would be moderate.

7.2.2.2 Alternative 3: Soil Excavation, Tank Content Removal, Treatment, and Disposal. Alternative 3 is similar to Alternative 2, except that the decontaminated tanks would remain in place. Following excavation of the contaminated soil and removal and treatment (if required) of the tank contents, the tanks would be decontaminated and then filled with an inert material like sand or grout. The excavated areas would be backfilled with clean soil.

Alternative 3 includes three variations, which differ in the technology for removing the tank contents and in the location for disposing contaminated soil and treated materials. Under Alternative 3a, the excavated soil and treated material would be disposed on the INEEL, while under Alternative 3b, the soil and treated material would be disposed off-Site. Both would remove the tank contents by adding

water to liquefy the contents so they can be removed using pumping technology. Under Alternative 3d, contaminated soil and tank waste would be disposed on the INEEL, but a commercially available, high-powered industrial vacuum would be used to empty the tanks without the addition of water. The vacuum would effectively mix the tank contents, resulting in a waste form that may be acceptable for on-Site disposal without further treatment. Sampling will be carried out on the tank contents to determine whether additional treatment is required. Stabilization or other treatment would be performed as required for disposal.

All three variations of Alternative 3 would accomplish the site RAOs in a short timeframe because the contamination and tank contents would be permanently removed. It is expected that no institutional controls would be required after the remedial action; however, this will be verified by confirmational sampling. The costs for these alternatives are $9.1, $12.1, and $5.9 million, respectively.

All three variations of Alternative 3 would protect human health and the environment and would comply with regulations. All would provide a high degree of long-term effectiveness by removing the contaminated soil and tank contents and decontaminating the tanks. However, the removal and decontamination processes increase the chance of worker exposure and, therefore, lower the short-term effectiveness. Implementability of Alternative 3 would be moderate to high. The cost of Alternative 3a and 3b would be relatively high, compared to other alternatives. Because use of the industrial vacuum is likely to result in a waste form not requiring additional treatment, Alternative 3d has a substantially lower cost.

7.2.2.3 Alternative 4: Soil Excavation and Disposal, In Situ Stabilization of Tank Contents.

Alternative 4 would involve building a temporary containment structure, excavating contaminated soil, stabilizing the tank contents, filling the remaining space in the tanks with an inert material like sand or grout, and disposing of the excavated soil. The excavated areas would be backfilled with clean soil. Because the tank contents would remain in place, institutional controls and long-term monitoring would be required.

Two variations are included under Alternative 4. Under Alternative 4a, the excavated soil would be disposed of on the INEEL, while under Alternative 4b, the excavated soil would be disposed of off the INEEL. The costs for these alternatives are $6.1 and $8.8 million, respectively.

Both variations of Alternative 4 would accomplish the site RAOs in a short timeframe because the contaminated soil is removed and the tank contents would be stabilized. To accomplish the RAOs, long-term institutional controls may be implemented to protect future occupational and residential land use.

Both variations of Alternative 4 would protect human health and the environment and may comply with the applicable regulations. Treating the tank contents in place would limit the potential for worker exposure, increasing the short-term effectiveness. Stabilization would not reduce the toxicity or volume of the waste; it would reduce mobility. Although both variations of Alternative 4 are based on a proven technology, it would be difficult to effectively treat all the waste using in situ methods. Therefore, implementability would be low. Long-term effectiveness would be moderate. Institutional controls and long-term monitoring would be required.

7.2.2.4 Alternative 5: Soil Excavation and Disposal, In Situ Vitrification of Tank Contents. Alternative 5 involves ISV of the tanks, their contents, and the surrounding soil. An electrical current would be used to melt the tanks, tank contents, and surrounding soil, which would then solidify into a glass-like material. The organic compounds would be destroyed or driven off, and heavy metals and radionuclides would be trapped inside the glassy solid or captured in the off-gas system. Organic compounds and particulates released during the process would be contained and treated at the surface. The costs for these alternatives are $13.6 and 16.3 million, respectively.

Alternative 5 includes two variations for soil disposal. Excavated soil outside the treatment area would be transported to an acceptable location, either on the INEEL (Alternative 5a) or off the INEEL (Alternative 5b). The excavated areas would be backfilled with clean soil.

Both variations of Alternative 5 would accomplish the site RAOs in a short timeframe because the contaminated soil is removed and the tank contents are vitrified. To accomplish the RAOs, long-term institutional controls may be implemented to protect future occupational and residential land use.

Alternative 5 would protect human health and the environment and may comply with the applicable regulations. The ISV would reduce toxicity by destroying the organic compounds and PCBs. Mobility of the radionuclides and metals would be reduced by dispersing them throughout and binding them into the glass-like solid. In addition, this alternative would provide minimal worker exposure to contaminants because the tank contents would not be directly contacted. However, ISV has never been demonstrated on tanks of this size; therefore, its implementability is uncertain. Long-term effectiveness would be lower than with other treatment alternatives, because the treated tank contents would remain in place. Institutional controls and long-term monitoring would be required.

7.2.3 Summary of Comparative Analysis of Alternatives

The following sections summarize the evaluation of the candidate remedial alternatives according to the criteria identified in Section 7.1.3 of this ROD. Detailed comparative analyses can be found in Section 12 of the RI/FS Report and the FS Supplement, Section 6.

7.2.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health arid the environment, and compliance with ARARs. All variations of Alternatives 2, 3, 4, and 5 meet both of the threshold criteria.

7.2.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost.

Alternatives 2a, 2b, 3a, 3b, and 3d best satisfy the criterion of long-term effectiveness because all contamination would be removed. Alternatives 4a, 4b, 5a, and 5b partially satisfy the long-term effectiveness criteria long-term institutional controls and monitoring would be required to assess the effects of the contamination left in place. Reduction of toxicity, mobility, or volume through treatment is best achieved by Alternatives 5a and 5b. These alternatives would reduce toxicity by binding radionuclides and heavy metals into the glass-like solid, and would reduce toxicity by destroying the organic compounds and PCBs. Alternatives 2a, 2b, 3a, 3b, 3d, 4a, and 4b partially satisfy the reduction criteria; each of these alternatives stabilizes the waste, which reduces the mobility but does not reduce the toxicity or volume. Short-term effectiveness is best satisfied by Alternatives 4a and 4b because the tank contents would be treated in place, reducing the potential for worker exposure. Alternatives 2a, 2b, 3a, 3b, 3d, 5a, and 5b partially satisfy this criterion because of the greater potential for worker exposure.

Alternative 3d best satisfies the implementability criteria because the waste form would not require treatment before disposal. Alternatives 2a, 2b, 3a, and 3b partially satisfy the implementability criteria because they would require treatment before disposal. Alternatives 4a, 4b, 5a, and 5b least satisfy implementability because of the uncertainty and difficulty of the in situ treatment. The estimated cost of Alternatives 3d and 4a is lowest, and that of Alternatives 5a and 5b the highest.

7.2.3.3 Modifying Criteria. The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved in the development and review of the RI/FS Report, the Proposed Plans, the FS Supplement, this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Generally, the selected remedy is supported, with concerns expressed about its compliance with ARARs and verifiability. The Responsiveness Summary (Part III) portion of the ROD documents the full range and content of the public comments received regarding the recommended action at this site.

7.2.4 Selected Remedy: Alternative 3d, Soil Excavation, Tank Content Vacuum Removal, Treatment, and Disposal

Based on consideration of the requirements of CERCLA, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 3d, Soil Excavation, Tank Content Vacuum Removal, Treatment, and Disposal. The selected remedy will satisfy the NCP to address the low-level threat waste posed by the PM-2A Tanks.

The major components of the selected remedy for the PM-2A Tanks include:

- Sampling of the surface soils for additional contaminants identified in the PM-2A Tanks to support a no-longer-contained-in determination and HWD
- Excavating contaminated soil
- Disposing the contaminated soil at an acceptable soil repository
- Sampling tank contents
- Removing tank contents using commercial vacuum excavation technology
- Verification of the waste form not requiring treatment before disposal (and treating tank contents to meet waste acceptance criteria, if necessary)
- Disposing the tank contents and IDW at an acceptable repository (or other approved facility, if necessary)
- Decontaminating the tanks and filling with an inert material

- Post-remediation sampling at the bottom of the excavation to verify FRGs are met and analyze for additional contaminants in the PM-2A Tank content waste to perform a risk analysis in support of an institutional control determination at this site

- Filling the excavated area with clean soil, then contouring and grading to surrounding soil

- Institutional controls consisting of signs, access control, and land-use restrictions may be established and maintained depending on the results of the sampling activities.

The selected remedy addresses the risks posed by the PM-2A Tanks by effectively removing the source of contamination and, thus, breaking the pathway by which a future receptor may be exposed.

Modifications to the excavation equipment will be made as needed to provide shielding (e.g., lead windows and lead lining on exterior-facing surfaces) and personal exposure protection (e.g., supplied air, positive-pressure ventilation systems, and HEPA filters). The following paragraphs detail the selected remedy.

Contaminated soil that is above the 23.3 pCi/g FRG for Cs-137 will be removed and will be packaged and disposed of at an acceptable soil repository, along with all debris (piping, IDW, etc.). Using radiological screening, uncontaminated soils (those with activities less than the remediation goal) will be stockpiled separately from the contaminated soils.

Waste characterization sampling will be conducted on the soil stockpiles and a wooden box full of soil that was discovered at this site during the 1995 OU 10-06 removal action. Based on the sampling results, uncontaminated soil will be returned to the excavation. Verification sampling within the excavation will be conducted before backfilling with uncontaminated soils. Treatment of soils in the wooden box is not anticipated, but options for treatment will be further evaluated upon receipt of the waste characterization data. Because of uncertainties of the contaminants in the wooden box, more than one treatment step could be required.

The vacuum excavation technology uses the kinetic energy of a high-velocity air stream to penetrate, expand, and break up solids and slurries. The loosened materials are captured by a high-powered vacuum air stream. The excavation head removes 5 to 12 cm (2 to 5 in.) of solids in a single pass and can work at depths greater than 9 m (30 ft). Waste from the tanks will be removed without the addition of any liquids. Following excavation of the contaminated soil and removal of the tank contents, the tanks will be decontaminated and then filled with an inert material like sand or grout.

Based on the RI results, the sludge associated with the PM-2A Tank is considered to be F001-listed waste. Although initial analysis was not performed per RCRA protocols and an accurate RCRA-waste determination cannot be made, the RI results indicate the waste may meet disposal criteria for a RCRA-compliant low-level waste landfill without treatment. Additional sampling will be required to verify treatment is not required before disposal.

Treatment, if required, would most likely consist of chemical stabilization since it is assumed from available analytical results the trichloroethylene (TCE) for which the waste is coded F001 may be below the LDR criteria, but the waste may be characteristic for metals. If the waste, when further characterized, is coded for metals, treatment will satisfy the applicable disposal criteria. The costs associated with treatment are not included in the cost estimate because the vacuum excavation technology is expected to produce a waste form that would be acceptable for on-Site disposal without further treatment.

Following removal a of the tank contents and contaminated soil, the waste would be disposed of at a site that will meet disposal requirements. The actual disposal location, which could be the Radioactive Waste Management Complex (RWMC), the proposed ICDF, or another facility on or off the INEEL, will be determined during remedial design following implementation of the ROD. Selection of the ICDF for disposal of TAN materials depends at least in part on the timeframe associated with operation of the facility (scheduled for receiving waste in the Year 2005) and its waste acceptance criteria.

If treatment were determined to be required, treatability tests may be necessary to ensure that the stabilized waste met the LDRs. Mixing of the sludge with the stabilizing materials would be conducted using readily available, conventional equipment. If the on-Site disposal option is not available at the time of the remedial action, contaminated material may be disposed of at an off-Site facility. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

Based on the results of post remedial action sampling, institutional controls may be required. The controls, if necessary, will provide unrestricted land use in 100 years, and will undergo 5-year reviews, as discussed in Section 10. Additional institutional control information is in Section 12. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

7.2.4.1 Estimated Cost for the Selected Remedy. The estimated capital and maintenance costs for implementing the selected remedy at the PM-2A Tank is $5,933,652. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives while factoring in inflation. Details of the cost estimates are presented in the Appendix A of the FS Supplement and summarized in Table 7-5.

7.2.4.2 Protection of Human Health and the Environment. Alternative 3d would be effective for the long-term protection of human health through removal of contaminants from the soil pathway and removal of contaminants from the tank followed by treatment (if required) and disposal of wastes, tank decontamination, and closure. This would eliminate the potential for future direct contact with or exposure to site contaminants. The remaining excess lifetime cancer risk at the site after the remedial action will be less than or equal to 1 in 10,000. The potential treatment processes would result in generation of some residual concentrated wastes as an output from the treatment process that will be properly dispositioned.

7.2.4.3 Compliance with ARARs. The selected remedy meets the identified ARARs. The ARARs, including chemical-specific, action-specific, and TBC guidance, for Alternative 3d, Soil Excavation. Tank Content Vacuum Removal, Treatment, and Disposal, are shown in Table 7-6.

7.2.4.4 Cost Effectiveness. The selected remedial action is cost-effective because it provides overall effectiveness in meeting the RAOs proportionate to its costs. When compared to other potential remedial actions, the selected remedy provides the best balance between cost and effectiveness in protecting human health and the environment.

Table 7-5. Cost estimate summary for the PM-2A Tanks (TSF-26) selected remedy.

		$ Fiscal Year (FY)-97
FFA/CO Management and Oversight		
	WAG 1—Management	425,556
Remediation Oversight		
	Construction Oversight	341,851
	Construction Project Management	569,751
	Remedial Action Document Preparation	24,233
	Remedial Action Report	10,880
	Packaging, Shipping, Transportation Documentation	19,512
	WAG-Wide Remedial Action 5-Year Review	39,474
Remedial Design		
	Title Design Construction Document Package	84,960
	Remedial Design Documentation per WAG 1 Baseline	31,928
	Prefinal Inspection Report	8,000
Remedial Action		
	Site Preparation	656,000
	On-Site Treatment of Tank Waste	489,500
	Excavate and Disposal of Soils	845,800
	Support Materials and Labor	393,000
	Subcontractor Indirect Costs	1,121,971
CAPITAL COST SUBTOTAL		5,062,416
	Contingency @ 30%	1,518,725
TOTAL CAPITAL COST IN FY-97 DOLLARS		6,581,140
TOTAL CAPITAL COST IN NET PRESENT VALUE		5,933,652
Operations		
	WAG 1—Management	N/A
	Annual Operations and Maintenance Reports	N/A
Decontamination and Dismantlement		N/A

Table 7-5. (continued).

		$ Fiscal Year (FY)-97
Surveillance and Monitoring		N/A
OPERATION & MAINTENANCE (O&M) COST SUBTOTAL		N/A
	Contingency @ 30%	N/A
TOTAL O&M COST IN FY-97 DOLLARS		N/A
TOTAL O&M COST IN NET PRESENT VALUE		N/A
TOTAL PROJECT COST IN NET PRESENT VALUE		5,933,652[a]

a. The total project cost does not include off-Site disposal of the final waste that may be needed if on-Site disposal is not available.

Table 7-6. ARARs for the PM-2A Tanks (TSF-26) selected remedy.

Category	Citation	Reason	Relevancy[a]
Chemical-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Toxic Substances" IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before start of construction, controlled, if necessary, and monitored during soil excavation, waste removal, treatment if performed, and tank decontamination.	A
	"Toxic Air Emissions" IDAPA 16.01.01.585 and .586		
NESHAPs	"Radionuclide Emissions from DOE Facilities" 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor, and establishes monitoring and compliance requirements.	A
	"Emission Monitoring" 40 CFR 61.93		
	"Emission Compliance" 40 CFR 61.94(a)		
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust during excavation and removal of waste from the tanks.	A
Requirements for Portable Equipment	IDAPA 16.01.01.500.02	Portable equipment for waste removal and treatment, if performed on-Site, and any portable support equipment must be operated to meet state and federal air emissions rules.	A
Resource Conservation and Recovery Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD is required for soils excavated for disposal, waste from the tanks, and any secondary waste generated during remedation.	A
	"Manifest" IDAPA 16.01.05.006 (40 CFR 262 Subpart B)	Establishes requirements for transporting hazardous waste to treatment and/or disposal site.	A

Table 7-6. (continued).

Category	Citation	Reason	Relevancy[a]
	"Pre-Transportation Requirements" IDAPA 16.01.05.006 (40 CFR 262.30 – 262.33)		
RCRA–Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"General Waste Analysis" IDAPA 16.01.05.008 (40 CFR 264.13(a)(1-3))	Analysis requirements apply to soils excavated for disposal, waste removed from the tanks, and secondary waste generated during remediation.	A
	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	Measures must be taken to restrict access to the site during waste removal, and treatment, if performed, tank decontamination, and tank closure.	A
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	Regular inspections must be performed during remediation.	A
	"Personnel Training" IDAPA 16.01.05.008 (40 CFR 264.16)	All personnel involved in soil excavation, waste removal, and treatment, if performed, decontamination, and tank closure must be trained.	A
	"Preparedness and Prevention" IDAPA 16.01.05.008 (40 CFR 264 Subpart C)	Applies to soil excavation, waste removal, and treatment, if performed, and decontamination activities.	A
	"Contingency Plan and Emergency Procedures" IDAPA 16.01.05.008 (40 CFR 264 Subpart D)	Applies to soil excavation, waste removal and treatment, if performed, and decontamination activities.	A
	"Equipment Decontamination" IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if hazardous waste is contacted.	A
	"Use and Management of Containers" IDAPA 16.01.05.008 (40 CFR 264.171 – 177)	Applicable to soils, tank waste, and any secondary hazardous waste generated remediation, which is managed in containers.	A

Table 7-6. (continued).

Category	Citation	Reason	Relevancy[a]
	"Tank Closure and Post Closure Care" IDAPA 16.01.05.008 (40 CFR 264.197(a))	All waste and contaminated soils must be removed and all tank structures to be left in the ground decontaminated.	A
	"Miscellaneous Units (only if treatment is required to meet LDRs)" IDAPA 16.01.05.008 (40 CFR Subpart X (except 264.603))	Requirements for an on-Site treatment system for the tank waste, if required.	A
RCRA – Land Disposal Restrictions	"LDR Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.40(a)(b)(e))	The waste, tank, and piping must be treated if necessary, to meet LDR criteria before disposal.	A
	"Treatment Standards for Hazardous Debris" IDAPA 16.01.05.011 (40 CFR 268.45(a)(b)(c)(d))		A
	"Universal Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.48(a))		A
	"Alternative Treatment Standards for Contaminated Soil" IDAPA 16.01.05.011 (40 CFR 268.49)	Applies to any contaminated soil that is to be removed from the PM-2A Tank for disposal at an approved facility on the INEEL or off the INEEL.	A
	"CERCLA Off-Site Policy" 40 CFR 300.440		A
To-Be-Considered			
Radiation Protection of the Public and the Environment	DOE Order 5400.5, Chapter II (1)(a,b)	Order that limits the effective dose to the public from exposure to radiation sources and airborne releases.	

Table 7-6. (continued).

Category	Citation	Reason	Relevancy[a]
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate.

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

8. LOW-LEVEL RADIONUCLIDE-CONTAMINATED SOIL/SEDIMENT RELEASE SITES

Remedial action is required for two low-level radionuclide-contaminated soil/sediment release sites: (1) the Soil Contamination Area South of the Turntable (TSF-06, Area B) and (2) the Disposal Pond (TSF-07). Releases at these sites may pose an imminent and substantial endangerment to human health and the environment. The site characteristics, including the nature and extent of contamination, the summary of site risks, remedial action alternatives, and the selected remedy are presented for these sites. More detailed information about the low-level radionuclide-contaminated soil/sediment release sites can be found in the OU 1-10 RI/FS Report (DOE-ID 1997b).

8.1 Soil Contamination Area South of the Turntable

The Soil Contamination Area South of the Turntable (TSF-06, Area B) is an open area bounded by the TSF fence on the west, and facility roads and several adjacent structures on the east and south (Figure 8-1). The site is approximately 205.8-m (675-ft) wide on the southern boundary and 129.6-m (425-ft) wide on the western boundary.

Surface soil at the site was contaminated by windblown radioactive particles from the contaminated soil at the PM-2A Tanks site (TSF-26). Contamination is suspected of extending beneath the adjacent road (Snake Avenue). Three patches of contamination remain in an approximate 152- by 30-m (500- by 100-ft) area after previous removal actions.

Currently, the site is administratively controlled. The site is within TSF-06, which is fenced and posted with signs that identify it as a CERCLA site. No activities can be performed within the site without contacting the INEEL Environmental Restoration Program. The purpose of these controls is to keep worker exposures ALARA and to prevent the spread of contaminated soil. The controls reduce current and future occupational exposure at the site to acceptable levels.

8.1.1 Summary of Site Risks

A HHRA and an ERA were conducted for the Soil Contamination Area South of the Turntable site. The results of the assessments indicate that this site may present an imminent and substantial endangerment to human health and the environment, and are summarized in Table 8-1. A more detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the HHRA and ERA is presented in Sections 6 and 7 of the OU 1-10 RI/FS Report.

8.1.1.2 Human Health Risks. The exposure route and the associated COCs that produce calculated risks greater than or equal to 1 in 10,000 at the site are external radiation exposure of current and future workers by Cs-137 and external radiation exposure of future residents by Cs-137. The results of the assessments are summarized in Table 8-1.

8.1.1.3 Ecological Risk Assessment. The Soil Contamination Area South of the Turntable was identified in the ERA as having an ecological risk (i.e., the HI) less than the threshold level of 1 and is considered not to pose an unacceptable threat to ecological receptors. No further ERAs will be performed at this site.

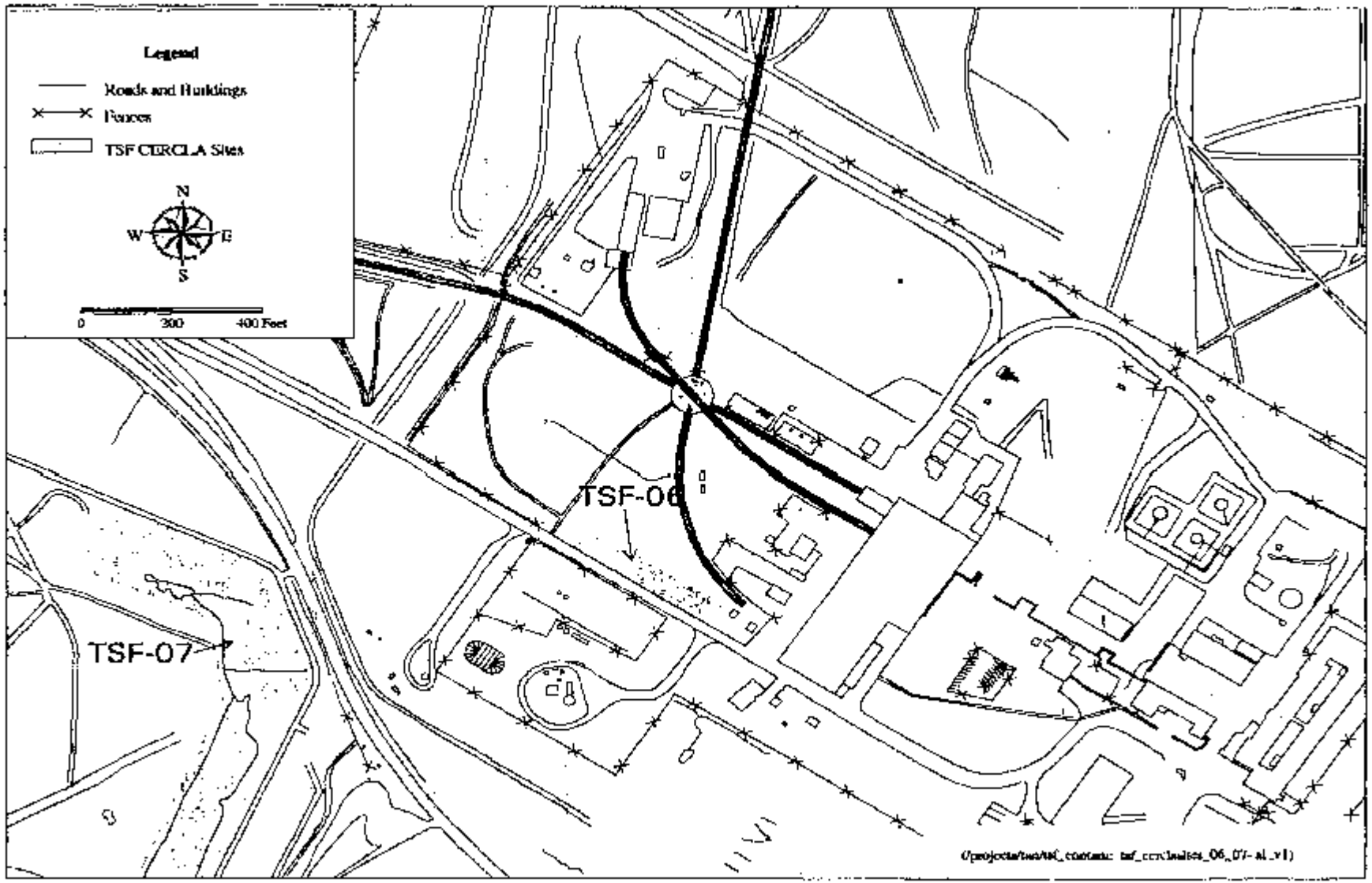


Figure 8-1. Radionuclide-contaminated soil/sediment release sites.

Table 8-1. Summary of risk estimates for the Soil Contamination Area South of the Turntable, Area B.

Scenario	Total Cancer Risk	Total Hazard Index
Occupational	1 in 10,000	0.00001
Residential	3 in 10,000	1

8.1.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS identified and evaluated remediation alternatives. Any selected alternative had to achieve the remediation goal of 23.3 pCi/g for Cs-137. The Cs-137 FRG of 23.3 pCi/g is a risk based remediation goal that ensures protectiveness of human health and the environment. This FRG will provide unrestricted land use in 100 years. The principal ARAR evaluated for the Soil Contamination Area South of the Turntable was the Idaho Fugitive Dust Emissions requirements. In addition to the "No Action" alternative, two alternatives were evaluated to remediate the Soil Contamination Area South of the Turntable:

- Alternative 2: Containment
- Alternative 3: Excavation and Disposal.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS Report.

8.1.2.1 Alternative 2: Containment. Under Alternative 2, the contaminated site would be covered with either a native soil cover (Alternative 2a) or an engineered barrier (Alternative 2b). The native soil cover would be a layer of INEEL soil covered by surface vegetation or a layer of rock to control surface exposures to subsurface radionuclides. The engineered barrier would be a cap of multiple layers of native geologic materials. The cap would control surface exposures to subsurface radionuclides and inhibit plants from growing and animals from burrowing at the site. In addition, institutional controls would be required to maintain the cover until the cesium decayed to acceptable levels. The costs for these alternatives are $2.8 and $2.6 million, respectively.

Both variations of Alternative 2 would accomplish the site RAOs in a long timeframe because contamination would be left in place. To accomplish the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use.

Alternative 2 would protect human health and the environment and comply with the regulations. Contamination would be left in place; however, it would be contained, resulting in moderate long-term effectiveness. This alternative would not reduce toxicity, mobility, or volume through treatment, however, it would prevent the spread of contamination from the site. There would be a possibility for worker exposure during construction of the cover, reducing the short-term effectiveness. Implementability of this alternative would be low because the alternative could not be implemented until some time in the future when Snake Avenue was not longer needed. The road would be difficult to relocate because of limited space.

8.1.2.2 Alternative 3: Excavation and Disposal. Under Alternative 3, the contaminated soil would be excavated and disposed of either on the INEEL (Alternative 3a) or off the INEEL (Alternative 3b) at an approved soil repository. The excavation would then be backfilled with clean soil. The costs for these alternatives are $2.2 and $5.1 million, respectively.

Both variations of Alternative 3 would accomplish the site RAOs in a short timeframe because contamination would be permanently removed. It is expected that no institutional controls would be required after the remedial action, and this will be verified by confirmational sampling.

Alternative 3 would protect human health and the environment and would comply with the regulations. This alternative would provide a high degree of long-term effectiveness because the contaminants would be removed. While this alternative would not reduce the volume or toxicity of the contaminants, it would reduce mobility (though not through treatment) because the contaminants would be moved to a managed area. The possibility of worker exposure to contaminants during excavation causes the short-term effectiveness of Alternative 3 to be moderate. Implementability would be high.

8.1.3 Summary of Comparative Analysis of Alternatives

The following sections summarize the evaluation of the candidate remedial alternatives according to the criteria identified in Section 7.1.3 of this ROD. Detailed comparative analyses can be found in Section 12 of the RI/FS Report.

8.1.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment, and compliance with ARARs. Both alternatives and their variations (Alternatives 2a, 2b, 3a, and 3b) meet the threshold criteria.

8.1.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability; and (5) cost.

Alternatives 3a and 3b best satisfy the criterion of long-term effectiveness because all contamination would be removed. Alternatives 2a and 2b only partially satisfy long-term effectiveness because contamination would be left in place, yet still contained. Reduction of toxicity, mobility, or volume through treatment is partially satisfied by Alternatives 3a and 3b; these alternatives would reduce mobility by moving the contamination to a managed facility. Alternatives 2a and 2b least satisfy the reduction criteria because they do not reduce toxicity, mobility, or volume; however, they do prevent the spread of contamination from the site. All of the alternatives partially satisfy short-term effectiveness because of the possibility of worker exposure. Alternatives 3a and 3b best satisfy implementability, while 2a and 2b least satisfy the criteria because the alternatives could not be implemented until some time in the future when Snake Avenue is no longer needed. Alternative 3a has the lowest estimated cost and Alternative 3b has the highest estimated cost.

8.1.3.3 Modifying Criteria. The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved in the development and review of the RI/FS Report (DOE-ID 1997b), the Proposed Plans (DOE-ID 1998a and DOE-ID 1998b), the FS Supplement (DOE-ID 1998c), this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Generally, the selected remedy is supported. The Responsiveness Summary (Part III) portion of this ROD documents the full range and content of the public comments received regarding the recommended action at this site.

8.1.4 Selected Remedy: Alternative 3a, Excavation and On-Site Disposal

Based on consideration of the requirements of CERCLA, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 3a, Excavation and On-Site Disposal. The selected remedy will satisfy the NCP requirements for the low-level threat posed by the Soil Contamination Area South of the Turntable. The major components of the selected remedy include:

- Sampling to identify the extent of soil exceeding the FRG and sample for contaminants that were identified in the PM-2A Tanks to support a no-longer-contained-in determination and HWD preparation for this site
- Removal of the adjacent road (Snake Avenue) and perform radiological surveys and sampling on the road base to determine areas exceeding the FRG
- Excavating contaminated soil to a maximum of 3 m (10 ft) or the maximum depth at which contaminant concentrations are above FRGs, whichever is less
- Sampling to verify the FRG was met
- Disposing of the contaminated soil at an acceptable soil repository
- Backfilling the excavated area with clean soil, then contouring and grading to surrounding soil.

The selected remedy addresses the risks posed by the Soil Contamination Area South of the Turntable, by effectively removing the source of contamination and thus breaking the pathway by which a future receptor may be exposed.

Implementation of this alternative would involve pre-excavation sampling to identify areas above the FRG. Additional samples would be collected to support a no-longer-contained-in determination and HWD due to windblown contamination from the PM-2A Tanks site.

After the no-longer-contained-in determination and HWD have been approved approximately 152 m (500 ft) of the adjacent road (Snake Avenue) will be removed. The asphalt before disposal will be surveyed by a radiological control technician and, if identified as clean, will be disposed at Central Facilities Area (CFA). If the radiological control technician is not able to release the asphalt, it will be sent to RWMC for disposal. Radiological survey and sampling would be conducted on the road base to determine areas exceeding the FRG.

Soil from the TSF-06 site and road base exceeding the FRG of 23.3 pCi/g Cs-137 will be excavated and transported to an approved soil repository. The actual disposal location, which could be the RWMC, the proposed ICDF, or another facility on or off the INEEL, will be determined during remedial design following implementation of the ROD. Selection of the ICDF for disposal of TAN materials depends at least in part on the timeframe associated with operation of the facility (scheduled for receiving waste in the Year 2005) and its waste acceptance criteria. Verification sampling will be used to ensure that all contamination is removed to a maximum of 3 m (10 ft) or maximum depths exceeding FRGs, whichever is less. The excavated areas will be backfilled with clean soil and seeded after excavation.

Based on the results of post remedial action sampling, institutional controls may be required. The controls, if necessary, will provide unrestricted land use in 100 years and will undergo 5-year reviews, as discussed in Section 10. Additional institutional control information is in Section 12.

This alternative represents the most permanent solution to the contamination problem and is the most cost-effective. The selected remedy is consistent with previous removal actions at TAN and would promote consolidation of the low-level radionuclide-contaminated soil/sediments in a centralized repository. Long-term monitoring and institutional controls are not expected to be required at the Soil Contamination Area South of the Turntable because the contamination will be removed. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

8.1.4.2 Estimated Costs for the Selected Remedy. The estimated capital and maintenance costs for implementing the selected remedy at the Soil Contamination Area South of the Turntable is $2,159,217. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives, while factoring in inflation. Details of these costs are presented in Appendix J of the RI/FS Report and summarized in Table 8-2.

8.1.4.3 Protection of Human Health and the Environment. The primary measure of the criterion of providing overall protection of human health and the environment is the ability of an alternative to achieve RAOs. Preventing contamination exposure to COCs in excess of 1 in 10,000 or HIs greater than or equal to 1 is key to meeting the RAOs and maintaining risk below acceptable levels.

Alternative 3a, Excavation and On-Site Disposal, would be effective for the long-term protection of human health through the removal of contaminants from the soil pathway. Performance standards will be implemented to ensure that the remediation activities will result in protection against direct exposure to the contaminants. The performance standard identified for this alternative includes removing the source of contamination so that the pathway by which a future receptor may be exposed is broken. This will be determined by confirmation sampling to ensure that the cleanup meets or exceeds remediation goals.

8.1.4.4 Compliance with ARARs. The Soil Contamination Area South of the Turntable is contaminated by windblown radiological contamination from the PM-2A Tanks (TSF-26) and a no-longer-contained-in determination will be prepared to support the HWD preparation. The selected remedy meets the identified ARARs as shown in Table 8-3.

8.1.4.5 Cost Effectiveness. The remedial action selected is cost-effective because it provides overall effectiveness in meeting the RAOs proportionate to its costs. When compared to other potential remedial actions, the selected remedy provides the best balance between cost and effectiveness in protecting human health and the environment.

Table 8-2. Cost estimate summary for the Soil Contamination Area South of the Turntable (TSF-06, Area B) selected remedy.

		$ Fiscal Year (FY)-97
FFA/CO Management and Oversight		
	WAG 1 – Management	212,778
Remediation Oversight		
	Construction Oversight	92,149
	Construction Project Management	153,582
	Remedial Action Document Preparation	24,233
	Remedial Action Report	10,880
	Packaging, Shipping, Transportation Documentation	19,512
	WAG-Wide Remedial Action 5-Year Review	N/A
Remedial Design		
	Title Design Construction Document Package	72,880
	Remedial Design Documentation per WAG 1 Baseline	31,928
	Prefinal Inspection Report	8,000
Remedial Action		
	Mobilization and Demobilization	10,000
	Excavate and Transport Contaminated Soil	250,000
	Replace Roadway	100,000
	Existing Power Poles Allowance	10,000
	Surveying, Grades, Lines, and Leveling	4,800
	Clean Fill and Reseeding	19,000
	Disposal Cost	520,000
	Subcontractor Indirect Costs	302,438
CAPITAL COST SUBTOTAL		1,842,180
	Contingency @ 30%	552,654
TOTAL CAPITAL COST IN FY-97 DOLLARS		2,394,834
TOTAL CAPITAL COST IN NET PRESENT VALUE		2,159,217
Operations		

Table 8-2. (continued).

		$ Fiscal Year (FY)-97
	WAG 1 – Management	N/A
	Annual Operations and Maintenance Reports	N/A
Decontamination and Dismantlement		N/A
Surveillance and Monitoring		N/A
OPERATION AND MAINTENANCE (O&M) COST SUBTOTAL		N/A
TOTAL O&M COST IN FY-97 DOLLARS		N/A
TOTAL O&M COST IN NET PRESENT VALUE		N/A
TOTAL PROJECT COST IN NET PRESENT VALUE		2,159,217

Table 8-3. ARARs for the Soil Contamination Area South of the Turntable (TSF-06, Area B) selected remedy.

Category	Citation	Reason	Relevancy[a]
Action Specific ARARs			
Rules for the Control of Air Pollution In Idaho	"Toxic Substances" IDAPA 16.01.01.161 "Toxic Air Emissions" IDAPA 16.01.01.585 and .586	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before start of construction, controlled, if necessary, and monitored during excavation and sorting of soil.	A
	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust during excavation, sorting and removal of the soils.	
	"Requirements for Portable Equipment" IDAPA 16.01.01.500.02	Portable equipment for sorting and removal of the soils, and any portable support equipment must be operated to meet state and federal air emissions rules.	A
NESHAPs	"Radionuclide Emissions from DOE Facilities" 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor, and establishes monitoring and compliance requirements.	A
	"Emission Monitoring" 40 CFR 61.93		
	"Emission Compliance" 40 CFR 61.94(a)		
Resource Conservation and Recovery Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD is required for the soils and any secondary waste generated during remediation.	A
	"Manifest" IDAPA 16.01.05.006 (40 CFR 262 Subpart B)	Establishes requirements for transporting hazardous waste to treatment and/or disposal site. Applies to any soils and secondary waste considered RCRA hazardous.	A
	"Pre-Transportation Requirements" IDAPA 16.01.05.006 (40 CFR 262.30 – 262.33)		

Table 8-3. (continued).

Category	Citation	Reason	Relevancy[a]
RCRA – Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"General Waste Analysis" IDAPA 16.01.05.008 (40 CFR 264.13 (a)(1-3))	Analysis requirements only apply to RCRA hazardous soils and secondary waste generated during remediation.	A
	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	If the soil site is determined to RCRA hazardous, measures must be taken to restrict access to the site during removal of soils and decontamination of equipment.	A
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	If the soil site is determined to be RCRA hazardous, regular inspections must be performed during remediation.	A
	"Personnel Training" IDAPA 16.01.05.008 (40 CFR 264.16)	If the soil site is determined to be RCRA hazardous, all personnel involved in soil excavation and sorting must be trained.	A
	"Preparedness and Prevention" IDAPA 16.01.05.008 (40 CFR 264 Subpart C)	Applies to soil excavation and decontamination activities if the soil site is determined to be RCRA hazardous.	A
	"Contingency Plan and Emergency Procedures" IDAPA 16.01.05.008 (40 CFR 264 Subpart D)	Apples to soil excavation and decontamination activities if the soil site is determined to be RCRA hazardous.	A
	"Equipment Decontamination" IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if RCRA hazardous waste is contacted.	A
	"Use and Management of Containers" IDAPA 16.01.05.008 (40 CFR 264.171 – 177))	Applicable to RCRA hazardous soils and associated hazardous secondary waste generated remediation that is managed in containers.	A
RCRA – Land Disposal Restrictions	"LDR Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.40(a)(b)(c))	Any secondary waste generated that is considered RCRA hazardous must be treated if necessary to meet LDR criteria before disposal.	A

Table 8-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Treatment Standards for Hazardous Debris" IDAPA 16.01.05.011 (40 CFR 268.45(a)(b)(c)(d))		A
	"Universal Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.48(a))		A
	"Alternative Treatment Standards for Contaminated Soils" IDAPA 16.01.05.011 (40 CFR 268.49)	Any excavated soils considered RCRA hazardous must meet the LDR standards for contaminated soil before disposal in an approved facility on the INEEL or off the INEEL.	A
	"CERCLA Off-Site Policy" 40 CFR 300.440		A
To-Be-Considered			
Radiation Protection of the Public and the Environment	DOE Order 5400.5, Chapter II (1)(a,b)	Order that limits the effective dose to the public from exposure to radiation sources and airborne releases.	
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

8.2 Disposal Pond (TSF-07)

The TAN Disposal Pond is a 14-ha (35-acre), unlined disposal pond in the southwest portion of TSF (see Figure 8-1). A 1-ha (2.5-acre) portion of the pond is still in use and will undergo assessment when operations cease. Only 2 ha (5 acre) in the northeast corner and on the eastern edge of the pond have been contaminated. Historically, the pond received sanitary waste discharges, low-level radioactive waste, industrial wastewater, and treated sewage effluent. The active portion of the pond is permitted by the State of Idaho to receive only sanitary and industrial waste. Sampling indicates that the cesium has migrated to approximately 3 m (11 ft) below the bottom of the pond.

Currently, the Disposal Pond is administratively controlled. The site is fenced and posted with signs that identify it as a CERCLA site. No activities can be performed within the site without contacting the INEEL Environmental Restoration Program and entry into the site requires radiological control precautions. The purpose of these controls is to keep worker exposures ALARA, and to prevent the spread of contaminated soil. The controls reduce current and future occupational exposure at the site to acceptable levels.

8.2.1 Summary of Site Risks

A HHRA and an ERA were conducted for the Disposal Pond site. The results of the assessments indicate that this site may pose an imminent and substantial endangerment to human health and the environment, and are summarized in Table 8-4. A more detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the Disposal Pond HHRA and ERA is presented in Sections 6 and 7 of the OU 1-10 RI/FS Report.

8.2.1.2 Human Health Risks. The exposure route and the associated COCs that produce calculated risks greater than 1 in 10,000 at the site are external radiation exposure of current workers by Cs-137 and external radiation exposure of future residents by Cs-137.

A cumulative human health HI of 3 was calculated. However, no single contaminant had a HQ greater than 1. Specifically, the highest calculated HQ for an individual contaminant is mercury with a HQ of 0.9. All other individual contaminants have a HQ significantly less than mercury. This HI does not pose an unacceptable risk to human health or the environment because no one contaminant exceeds the threshold of 1.

8.2.1.3 Ecological Risk Assessment. The Disposal Pond was identified in the ERA as having an ecological risk (i.e., the HI) greater than the threshold level of 1 from arsenic, mercury, tetrahydrofuran, and thallium. The site will be considered under an INEEL-wide program to ensure it is not posing an unacceptable threat to ecological receptors at a population level. The WAG 10 Site-wide ERA will incorporate the results of the WAG 1 assessment to evaluate the potential effect of the sites at the population level. If remedial action is necessary, this action will be implemented by WAG 1 under a separate decision document.

Table 8-4. Summary of risk estimates for Disposal Pond.

Area	Scenario	Total Cancer Risk	Total Hazard Index
Test Area North Disposal Pond (Disposal Pond)	Occupational	1 in 10,000	0.00001
	Residential	8 in 10,000	3[a]

a. The residential scenario HI is principally a result of mercury (which has an HQ of 0.9). The rest of the value is produced by contaminants with individual HQ less than 1.

8.2.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS identified and evaluated remediation alternatives. Any selected alternative had to achieve the FRG of 23.3 pCi/g for Cs-137. The Cs-137 FRG of 23.3 pCi/g is a risk-based remediation goal that ensures protectiveness of human health and the environment. This FRG will provide unrestricted land use in 100 years. The principal ARAR evaluated for the Disposal Pond was the Idaho Fugitive Dust Emissions requirements. In addition to the "No Action" alternative, three alternatives were evaluated to remediate the Disposal Pond site:

- Alternative 1: Limited Action
- Alternative 2: Containment
- Alternative 3: Excavation and Disposal.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS Report.

8.2.2.1 Alternative 1: Limited Action. Under Alternative 1, existing management practices, including institutional controls and environmental monitoring, would continue for the period of institutional control. The cost for this alternative is $1.2 million.

Alternative 1 would accomplish the site RAOs in a long timeframe because contamination would be left in place. To accomplish the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use. Institutional controls are a primary component of this alternative.

Alternative 1 would protect human health and the environment and would comply with the regulations. Although contamination would be left in place, the radioactivity would decay to within acceptable levels during the 100-year period of institutional control. Ecological exposure would be minimized when pond operations cease and water is eliminated from the pond. Long-term effectiveness would be high. Short-term effectiveness would be high, because workers would not be exposed to contaminants. This alternative would not reduce toxicity, mobility, or volume through treatment; however, it would prevent the spread of contamination from the site. Because the management practices are already in place, implementability would be high.

8.2.2.2 Alternative 2: Containment. Alternative 2 would consist of covering the contaminated site with either a native soil cover (Alternative 2a) or an engineered barrier (Alternative 2b). The native soil cover would consist of a layer of INEEL soil and surface vegetation or a layer of rock to control surface exposures to subsurface radionuclides. The engineered barrier would consist of a cap of multiple layers of native geologic materials to control surface exposures to subsurface radionuclides and inhibit plants from growing and animals from burrowing. In addition, institutional controls would be required until the cesium decayed to acceptable levels. The cost for these alternatives are $5.6 and $4.5 million, respectively.

Both variations of Alternative 2 would accomplish the site RAOs in a short timeframe because the cover can be completed within a short time period. To maintain the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use.

Alternative 2 would protect human health and the environment and would comply with the regulations. Contamination would be left in place; however, it would be contained and will decay to

within acceptable levels within 100 years, resulting in high long-term effectiveness. This alternative would not reduce toxicity, mobility, or volume through treatment; however, it would prevent the spread of contamination from the site. There would be a possibility for worker exposure during construction of the cover, reducing the short-term effectiveness. Implementability of this alternative would be moderate.

8.2.2.3 Alternative 3: Excavation and Disposal. Under Alternative 3, the contaminated soil would be excavated and disposed at an approved repository either on the INEEL (Alternative 3a) or off-Site (Alternative 3b). The cost for these alternatives are $20.9 and $54.0 million, respectively.

Both variations of Alternative 3 would accomplish the site RAOs in a short timeframe because contamination would be permanently removed. It is expected that no institutional controls would be required after the remedial action, and this will be verified by confirmational sampling.

Alternative 3 would protect human health and the environment and would comply with the regulations. Long-term effectiveness would be high because contaminants would be removed. This alternative would not reduce the toxicity, mobility, or volume of the contaminants through treatment; however, it would prevent the spread of contamination from the site. There would be a possibility for worker exposure during excavation, reducing the short-term effectiveness. The implementability would be moderate.

8.2.3 Summary of Comparative Analysis of Alternatives

The following sections summarize the evaluation of the candidate remedial alternatives according to the criteria identified in Section 7.1.3 of this ROD. Detailed comparative analyses can be found in Section 12 of the RI/FS Report.

8.2.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment, and compliance with ARARs. All of the alternatives for the Disposal Pond (Alternatives 1, 2a, 2b, 3a, and 3b) meet the threshold criteria.

8.2.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost.

All of the alternatives best satisfy the criterion of long-term effectiveness because all remaining contamination would be below risk-based concentrations and allow unrestricted land use in 100 years, either by removal of contamination or by radioactive decay and use of institutional controls. Reduction of toxicity, mobility, or volume through treatment is least satisfied by all of the alternatives, however, each of the alternatives prevents the spread of contamination from the site. Alternative 1 best satisfies short-term effectiveness because workers will not be exposed to contamination. Alternatives 2a and 2b only partially satisfy short-term effectiveness because of the possibility of worker exposure during construction of the cover. Alternatives 3a and 3b least satisfy short-term effectiveness because of the potential for worker exposure during excavation. Alternative 1 best satisfies the implementability criteria because the management practices are already in place. Implementability is only partially satisfied by Alternatives 2a, 2b, 3a, and 3b because implementability would be moderate. Alternative 1 has the lowest estimated cost and Alternative 3b has the highest estimated cost.

8.2.3.3 Modifying Criteria. The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved

in the development and review of the RI/FS Report (DOE-ID 1997b), the Proposed Plans (DOE-ID 1998a and DOE-ID 1998b), the FS Supplement (DOE-ID 1998c), this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Generally, the selected remedy is supported, although comments showed some preference for alternatives that remove or treat contaminated soil. The Responsiveness Summary (Part III) portion of this ROD documents the full range and content of the public comments received regarding the recommended action at this site.

8.2.4 Selected Remedy: Alternative 1, Limited Action

Based on consideration of the requirements of CERCLA, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 1, Limited Action. The major components of the selected remedy include:

- Soil sampling will be performed for contaminants identified in the TSF-05 injection well to support a no-longer-contained-in determination for the surface soils at TSF-07
- Inspecting existing operational controls to assess the adequacy and need for additional institutional controls
- Implementing additional institutional controls as needed, including access restrictions (e.g., fences, posted signs, and permanent markers) limiting land use for at least 100 years
- Environmental monitoring for at least 100 years to protect current and future occupational receptors.

The alternative was selected because it will meet the site RAOs by allowing Cs-137 to decay to less than unrestricted land use concentrations within the period of institutional controls. The Limited Action alternative complies with requirements of the NCP by using controls to address the low-level threat posed by the Disposal Pond, and satisfies guidance for conducting an FS under CERCLA. Limited action consists of existing management practices, including institutional controls and environmental monitoring. Under this alternative, the implementation of institutional controls and environmental monitoring would be expanded to accommodate site-specific concerns. In addition, 5-year site reviews would be conducted to evaluate the effectiveness of the institutional controls and the need for further environmental monitoring, or additional control measures, as applicable. Additional information about the 5-year site reviews is given in Section 10. Section 12 details institutional controls to be implemented at this site. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

8.2.4.1 Estimated Costs for the Selected Remedy. The estimated capital and maintenance costs for implementing the selected remedy at the Disposal Pond is $1,184,508. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives while factoring in inflation. Details of the cost estimates are summarized in Table 8-5 and presented in full in Appendix J of the RI/FS Report.

Table 8-5. Cost estimate summary for the Disposal Pond (TSF-07) selected remedy.

		$ Fiscal Year (FY)-97
FFA/CO Management and Oversight		
	WAG 1 – Management	141,852
Remediation Oversight		
	Construction Oversight	17,550
	Construction Project Management	29,250
	Remedial Action Document Preparation	24,233
	Remedial Action Report	10,880
	Packaging, Shipping, Transportation Documentation	N/A
	WAG-Wide Remedial Action 5-Year Review	39,474
Remedial Design		
	Title Design Construction Document Package	11,880
	Remedial Design Documentation per WAG 1 Baseline	31,928
	Prefinal Inspection Report	8,000
Remedial Action		
	Capital Costs	75,000
	Subcontractor Indirect Costs	57,600
CAPITAL COST SUBTOTAL		447,647
	Contingency @ 30%	134,294
TOTAL CAPITAL COST IN FY-97 DOLLARS		581,941
TOTAL CAPITAL COST IN NET PRESENT VALUE		524,686
Operations		
	WAG 1 – Management	625,526
	Annual Operations and Maintenance Reports	75,000
Surveillance and Monitoring		605,000
OPERATION & MAINTENANCE (O&M) COST SUBTOTAL		1,305,526[a]
	Contingency @ 30%	391,658

Table 8-5. (continued).

	$ Fiscal Year (FY)-97
TOTAL O&M COST IN FY-97 DOLLARS	1,697,183
TOTAL O&M COST IN NET PRESENT VALUE	659,822
TOTAL PROJECT COST IN NET PRESENT VALUE	1,184,508

a. O&M was calculated using 100 years of maintenance and a discount rate of 5%.

8.2.4.2 Protection of Human Health and the Environment. Alternative 1, Limited Action, will meet the RAOs since Cs-137 will decay to less than unrestricted land use concentrations within the 100-year institutional control period and, therefore, be effective in protecting human health and the environment. However, in order, to reduce the potential for unacceptable exposures to future workers or residents, the existing institutional controls will be maintained until such time there is acceptable risk from the site due to decay of Cs-137.

8.2.4.3 Compliance with ARARs. The selected remedy meets the identified ARARs as shown in Table 8-6.

8.2.4.4 Cost Effectiveness. The remedial action selected is cost-effective because it provides overall effectiveness in meeting the RAOs proportionate to its costs. When compared to other potential remedial actions, the selected remedy provides the best balance between cost and effectiveness in protecting human health and the environment.

Table 8-6. ARARs for the Disposal Pond (TSF-07) selected remedy.

Citation		Reason	Relevancy[a]
Chemical-Specific ARARs			
NESHAPs	"Radionuclide Emissions from DOE Facilities" 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor, and establishes monitoring and compliance requirements.	A
	"Emission Monitoring" 40 CFR 61.93		A
	"Emission Compliance" 40 CFR 61.94(a)		A
Resource Conservation and Recovery Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD will be required for samples taken to obtain a non-longer-contained-in determination.	A
RCRA – Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	Measures must be taken to restrict access to the site for as long as direct exposure to hazardous contaminants is possible.	RA
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	Regular inspections of the site are required for as long as direct exposure to hazardous contaminants is possible	RA
To-Be-Considered			
Radioactive Waste Management	DOE Order 435.1	Order that provides guidance on disposal of low-level radioactive waste at DOE facilities.	
Radiation Protection of the Public and the Environment	DOE Order 5400.5, Chapter II (1)(a,b)	Order that limits the effective dose to the public from exposure to radiation sources and airborne releases.	
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

9. NONRADIONUCLIDE-CONTAMINATED SOIL/SEDIMENT RELEASE SITES

Remedial action is required for three nonradionuclide-contaminated soil/sediment release sites: the Burn Pits (TSF-03 and WRRTF-01) and the Fuel Leak (WRRTF-13) (see Figures 9-1 and 9-2). Releases at these sites may pose an imminent and substantial endangerment to human health and the environment. The site characteristics, including the nature and extent of contamination, the summary of site risks, remedial action alternatives, and the selected remedy, are presented for these sites.

A fourth nonradionuclide-contaminated soil/sediment release site, the Mercury Spill Area (TSF-08) (see Figure 9-2), was selected to be used for a treatability study to evaluate plant uptake factors and rates for phytoremediation. This site is a concern due to an elevated HI should residential use occur at the site. This HI is a result of mercury contaminated soils being brought to the surface for gardening and ingestion of these crops. There is an uncertainty regarding an INEEL specific uptake of mercury by plants. Accordingly, WAG 10 will perform additional studies of this site to determine this uptake and a revised risk analysis will be conducted from the site specific data. More detailed information about the nonradionuclide-contaminated soil/sediment release sites can be found in the OU 1-10 RI/FS Report (DOE-ID 1997b). At the completion of this treatability study, if additional remedial action is necessary, this will be documented in a separate decision document and will be performed by WAG 1.

9.1 Burn Pits

The two Burn Pits (TSF-03 and WRRTF-01) were used for open burning of construction debris. The TSF-03 Pit was used from 1953 to 1958; the four WRRTF-01 Pits were used from 1958 to 1975. Because of the similarities between the two sites, they were evaluated together.

The TSF-03 Burn Pit is located in the northeast corner of the TSF, outside the facility fence. The surficial boundary dimensions are estimated to be 7.9 by 19.5 m (26 by 64 ft) and is covered with approximately 0.6 to 1.8 m (2 to 6 ft) of clean soil, which eliminates the potential for worker exposure.

The WRRTF-01 Burn Pits are approximately 823 m (2,700 ft) north of WRRTF, outside the facility fence. The total surficial boundary dimensions of this site is estimated to be 122 by 50 m (400 by 164 ft) and is covered with approximately 15 cm to 3 m (6 in. to 9 ft) of clean soil and revegetated.

The Burn Pits are contaminated with lead. While lead does not present a risk that can be calculated using risk guidelines, the EPA has established a residential screening level to address the human health risk caused by lead. Contamination within the top 3 m (10 ft) of soil could be a risk to a hypothetical future resident if the subsurface soil was disturbed and brought to the surface. Recent investigation into available records indicates that other toxic substances, such as beryllium, chlorinated solvents, and used oils, were burned in the pits.

Currently, the Burn Pits are administratively controlled with signs identifying them as CERCLA sites. No activities can be performed without contacting the INEEL Environmental Restoration Program. The purpose of these controls is to keep worker exposures ALARA, and to prevent the spread of contaminated soil. The controls reduce current and future occupational exposure at the site to acceptable levels.

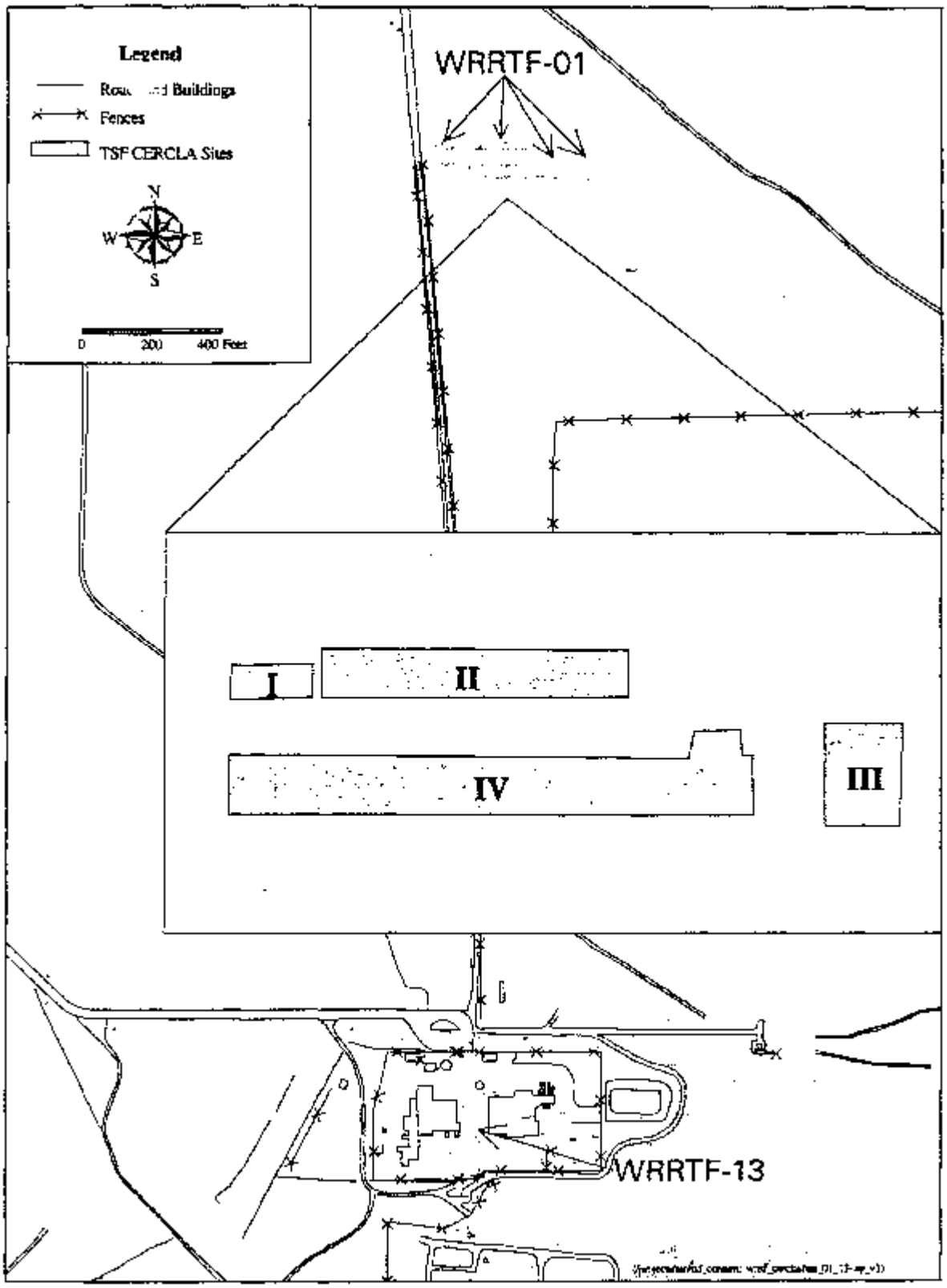


Figure 9-1. The WRRTF nonradionuclide-contaminated release sites.

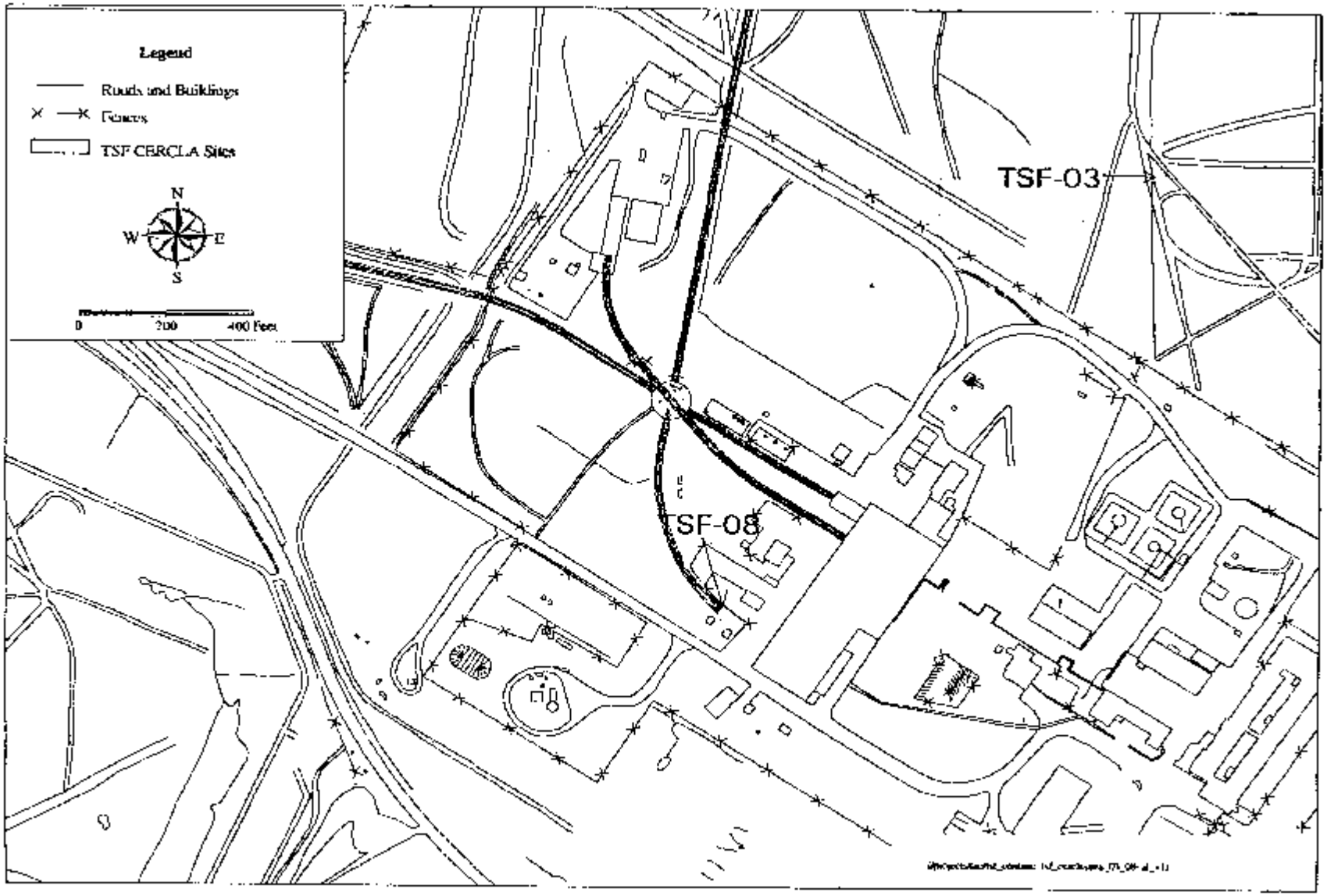


Figure 9-2. The TSF nonradionuclide-contaminated release sites.

9.1.1 Summary of Site Risks

A HHRA and an ERA were conducted for the two Burn Pits. Calculation of numeric health risk values for lead is not possible. Instead, the EPA residential screening level for lead was used to determine the need for cleanup. Since lead concentrations at these sites are greater than the 400 mg/kg, an imminent and substantial endangerment to human health and the environment may exist. A more detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the Burn Pits HHRA and ERA are presented in Sections 6 and 7 of the OU 1-10 RI/FS Report and Section 5 and 6 of the FS Supplement.

9.1.1.1 Human Health Risks. No contaminants were detected at the Burn Pits that would producecalculated risks greater than or equal to 1 in 10,000 or calculated HIs greater than 1; however, lead was detected at the pits at concentrations greater than EPAs 400 mg/kg residential cleanup level.

9.1.1.2 Environmental Risk Assessment. The Burn Pits were identified in the ERA as having an ecological risk (i.e., HI) greater than the threshold level of 1. The Burn Pits will also be considered under a Site-wide program to ensure they do not pose an unacceptable threat to ecological receptors at a population level. The WAG 10 Site-wide ERAs will incorporate the results of the WAG 1 assessment to evaluate the potential effect of the sites at the population level.

9.1.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS identified and evaluated remediation alternatives. Any selected alternative had to achieve the remediation goal of 400 mg/kg for lead. In addition to the "No Action" alternative, four alternatives were evaluated to remediate the Burn Pits:

- Alternative 1: Limited Action
- Alternative 2: Native Soil Cover
- Alternative 3: Excavation and Disposal
- Alternative 4: Excavation and Soil Washing.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS Report and Sections 5 and 6 of the FS Supplement.

9.1.2.1 Alternative 1, Limited Action. Under Alternative 1, existing management practices would continue. Fencing and institutional controls (signs and disturbance controls) would also be implemented. The cost for this alternative is $3.0 million.

Alternative 1 would accomplish the site RAOs in a long timeframe because contamination would be left in place. To accomplish the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use. Institutional controls are a primary component of this alternative.

Alternative 1 would comply with the regulations and protect human health and the environment after the period of institutional control. Under Alternative 1, contamination would be left in place, resulting in low long-term effectiveness. This alternative would not reduce toxicity, mobility, or volume through treatment. Because the management practices are already in place, implementability would be

high. Short-term effectiveness would be high, because no handling or transport of contaminants would be required.

9.1.2.2 Alternative 2, Native Soil Cover. Under Alternative 2, a uniforrn layer of clean soil and surface vegetation or rock would be added to limit direct contact with contaminated soil. Environmental monitoring would be conducted and institutional controls maintained to preserve the protectiveness of this alternative. The cost for this alternative is $4.9 million.

Alternative 2 would accomplish the site RAOs in a short timeframe because covers can be completed in a short time. To maintain the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use.

Alternative 2 would protect human health and the environment and comply with the regulations. Contamination would be left in place and contained. This alternative would not reduce toxicity, mobility, or volume through treatment; however, the cap would prevent contact to lead contamination and mobility would be reduced. There would be a possibility for worker exposure during construction of the cover, reducing the short-term effectiveness. Implementability would be high, given the INEELs success using soil covers.

9.1.2.3 Alternative 3, Excavation and Disposal. Under Alternative 3, contaminated soil exceeding the remediation goal would be removed and disposed. The excavation would be backfilled with clean soil. Two variations of Alternative 3 were considered. Under Alternative 3a, the contaminated soil would be disposed of off the INEEL, while under Alternative 3b, the contaminated soil would be disposed on the INEEL. For both variations, it is assumed that no treatment would be required. The costs for these alternatives are $13.9 and $6.0 million, respectively.

Alternative 3b would use sampling and analysis before excavation to determine whether the soil meets disposal criteria or requires treatment. Treatment options would be evaluated based on characterization data.

Both variations of Alternative 3 would accomplish the site RAOs in a short timeframe because contamination would be permanently removed. It is expected that no institutional controls would be required after the remedial action, but would be verified by confirmational sampling.

Both variations of Alternative 3 would protect human health and the environment and would comply with the regulations. Long-term effectiveness would be high because the contaminants would be removed. Both variations of Alternative 3 would not reduce toxicity, mobility, or volume of the contaminants through treatment unless treatment to meet waste acceptance criteria is required. There would be a possibility for worker exposure during excavation and transportation to the disposal facility, reducing the short-term effectiveness. Implementability would be high since reliable technologies are available for excavation and treatment.

9.1.2.4 Alternative 4, Excavation and Soil Washing. Under Alternative 4, all contaminated soil would be excavated. Clean soil cover at the sites would be removed and stockpiled so that contaminated soil would be accessible. Lead-contaminated soil would be treated onsite using a soil washing technology and the treated soils would be returned to the excavation. The soil washing technique is assumed to be effective on the lead-contaminated soil at the sites; however, a treatability study to evaluate the technical feasibility of this alternative would be required. The cost for this alternative is $18.3 million.

Alternative 4 would accomplish the site RAOs in a short timeframe because contamination would be permanently removed. It is expected that no institutional controls would be required after the remedial action, but would be verified by confirmational sampling.

Alternative 4 would protect human health and the environment and would comply with the regulations. Long-term effectiveness would be high because the contaminants would be removed. There would be a possibility for worker exposure during excavation and treatment activities, reducing the short-term effectiveness. Implementability would be difficult because a soil-washing treatability study would have to be conducted on the INEEL soil to further evaluate its technical feasibility.

9.1.3 Summary of Comparative Analysis of Alternatives

The following sections summarize the evaluation of the candidate remedial alternatives according to the criteria identified in Section 7.1.3 of this ROD. Detailed comparative analyses can be found in Section 12 of the RI/FS Report (DOE-ID 1997b) and Section 6.2 of the FS Supplement (DOE-ID 1998c).

9.1.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment, and compliance with ARARs. All of the alternatives considered for the Burn Pits (Alternatives 1, 2, 3a, 3b, and 4) meet the threshold criteria.

9.1.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost.

Alternatives 3a, 3b, and 4 best satisfy the criterion of long-term effectiveness because all contamination would be removed. Alternative 2 partially satisfies long-term effectiveness because contamination would be left in place, yet still contained. Alternative 1 least satisfies long-term effectiveness because contamination would be left in place. Reduction of toxicity, mobility, or volume through treatment is partially satisfied by Alternatives 3b and 4; both would potentially use treatment. Alternatives 1, 2, and 3a least satisfy the reduction criteria because they do not reduce toxicity, mobility, or volume in any way. Alternative 1 best satisfies short-term effectiveness because workers will not be exposed to contamination. Alternatives 2, 3a, 3b, and 4 partially satisfy short-term effectiveness because there is the potential for worker exposure with each of these alternatives. Implementability is best satisfied by Alternatives 1, 2, 3a, and 3b because of past success and knowledge of these alternatives. Implementability of Alternative 4 would be partially satisfied because a soil-washing treatability study would have to be conducted. Alternative 1 has the lowest estimated cost and Alternative 4 has the highest estimated cost.

9.1.3.3 Modifying Criteria. The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved in the development and review of the RI/FS Report (DOE-ID 1997b), the Proposed Plans (DOE-ID 1998a and DOE-ID 1998b), the FS Supplement (DOE-ID 1998c), this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Comments were largely unsupportive of the selected remedy because, the remedy originally did not remove or treat contaminants. However, the Agencies are moving forward with a revised remedy, as a response to the comments, which includes additional sampling that will determine if there are other COCs. If so, and it is cost effective, then the contingent remedy will involve soil removal and disposal. The Responsiveness Summary (Part III) portion of this ROD documents the full range and content of the public comments received regarding the recommended action at this site.

9.1.4 Selected Remedy: Alternative 2, Native Soil Cover

Based on consideration of the requirements of CERCLA, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 2, Native Soil Cover, as the remedy for the two Burn Pits. The selected remedy will satisfy the NCP requirements for the low-level threat posed by the Burn Pits. The major components of the selected remedy include:

- Sampling to determine the cover design and monitoring requirements, and to ensure the remedy is protective of human health and the environment
- Comparing cost of the soil cover and long-term monitoring with the excavation and disposal option
- If the soil cover option is selected, adding uniform layers of clean soil and surface vegetation to limit direct contact with contaminated soil
- Inspecting of existing institutional controls to assess the adequacy and need for additional controls.

The selected remedy addresses the risk posed by the Burn Pits by effectively preventing access to the area and exposure to contaminated media.

The native soil cover is intended to provide a standoff cover to support run-on and runoff control and be less permeable then the underlying soil. For costing purposes it was assumed that this cover would be 3 m (10 ft) of clean INEEL native soils above areas with soil concentrations above FRGs. Alternative 2 will use sampling and analysis to assess the Burn Pits for additional COCs that may have not been properly evaluated during the RI. If the sample analyses indicate that additional contaminants are present, and a cover cannot be designed cost effectively to be protective based on the presence of these contaminants, and it is more cost effective to excavate and dispose of the waste, then this will be the selected alternative. The, costs associated with the contingent alternative are not included in the cost estimate. The following paragraphs detail the selected remedy.

The native soil cover is intended to provide a standoff cover of clean INEEL native soils. The cover would be integrated into the natural surrounding grade. The depth of the soil cover will be such to ensure protectiveness of human health and the environment and will be designed in the remedial design/remedial action (RD/RA) phase. The surface of the soil cover would be vegetated to limit infiltration and erosion. Site-specific considerations would be used to design the optimum configuration.

Conventional earthmoving equipment would be used for cap construction. Exposure to lead in soils would be minimized during construction activities through the use of personal protective equipment and engineering controls. Surface water controls would be implemented during construction.

Environmental monitoring (air, soil, and groundwater, as applicable) and cap integrity monitoring and maintenance (repairing any observable degradation including cracks, erosion, and biotic intrusion) would be conducted on a periodic basis as part of this alternative. Institutional controls will be implemented as part of this remedy. Current management practices, such as restricting activities conducted at the sites without clearance from INEEL Environmental Restoration Program, would continue. Five-year site reviews would be conducted to evaluate the effectiveness of the native soil cover and the need for additional environmental monitoring or institutional control requirements, as necessary. Additional information about the institutional controls is in Section 12.

At the WRRTF-01 Burn Pits, a native soil cover of clean INEEL soil would be placed over the extent of Pits I, II, and IV, an area of approximately 122 by 50 m (400 by 164 ft). The depth of the soil cover will be such to ensure protectiveness of human health and the environment and will be designed in the RD/RA phase. This soil will prevent direct exposure to the contaminants and will be compacted so that it is less permeable than the underlying material to prevent infiltration from creating a bathtub effect. The extent of the native soil cover would not need to encompass Pit III because lead was not detected at levels above the preliminary remediation goal (PRG).

At the TSF-03 Burn Pit, a native soil cover of clean INEEL soil would be placed over the extent of the Burn Pit, an area of approximately 8 by 10 m (26 by 64 ft). The depth of the soil cover will be such to ensure protectiveness of human health and the environment and will be designed in the RD/RA phase. This soil will prevent direct exposure to the contaminants and will be compacted so that it is less permeable than the underlying material to prevent infiltration from creating a bathtub effect. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

9.1.4.1 Estimated Costs for the Selected Remedy. The estimated capital and maintenance cost for implementing the selected remedy for the Burn Pits is $4,898,412. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives while factoring in inflation. Details of the cost estimates are presented in Appendix J of the RI/FS Report and summarized in Table 9-1.

9.1.4.2 Protection of Human Health and the Environment. The selected remedy is expected to be protective of human health and the environment. RAOs will be achieved by providing a standoff cover of clean INEEL soils, combined with environmental monitoring and institutional controls. Preventing contamination exposure to a hypothetical future resident is key to meeting RAOs and maintaining risk below acceptable levels.

9.1.4.3 Compliance with ARARs. The selected remedy will meet the potential ARARs as summerized in Table 9-2. Contingency remedy ARARs for this site are summarized in Table 9-3. After the institutional control period, ARARs and TBCs will be met by imposing restrictions.

9.1.4.4 Cost Effectiveness. The selected remedy is cost-effective because it provides overall effectiveness in meeting the RAOs proportionate to its costs. When compared to other potential remedial actions, the selected remedy provides the best balance between cost and effectiveness in protecting human health and the environment.

Table 9-1. Cost estimate summary for the Burn Pits (TSF-03 and WRRTF-01) selected remedy.

		$ Fiscal Year (FY)-97
FFA/CO Management and Oversight		
	WAG 1 – Management	425,556
Remediation Oversight		
	Construction Oversight	207,418
	Construction Project Management	345,696
	Remedial Action Document Preparation	48,466
	Remedial Action Report	21,760
	Packing, Shipping, Transportation Documentation	N/A
	WAG-Wide Remedial Action 5-Year Review	78,947
Remedial Design		
	Title Design Construction Document Package	30,720
	Remedial Design Documentation per WAG 1 Baseline	63,856
	Prefinal Inspection Report	16,000
Remedial Action		
	Soil Cap Construction	818,000
	Access Restriction Fencing	57,000
	Surface Water Diversion Ditches	11,400
	Subcontractor Indirect Costs	680,755
CAPITAL COST SUBTOTAL		2,805,574
	Contingency @ 30%	841,672
TOTAL CAPITAL COST IN FY-97 DOLLARS		3,647,246
TOTAL CAPITAL COST IN NET PRESENT VALUE		3,352,940
Operations		
	WAG 1 – Management	1,251,051
	Annual Operations and Maintenance Reports	150,000
Decontamination and Dismantlement		N/A
Surveillance and Monitoring		1,716,200
OPERATION & MAINTENANCE (O&M) COST SUBTOTAL		3,117,251[a]

Table 9-1. (continued).

	$ Fiscal Year (FY)-97
Contingency @ 30%	935,175
TOTAL O&M COST IN FY-97 DOLLARS	4,052,427
TOTAL O&M COST IN NET PRESENT VALUE	1,545,472
TOTAL PROJECT COST IN NET PRESENT VALUE	4,898,412

a. O&M was calculated using 100 years of maintenance and a discount rate of 5%.

Table 9-2. ARARs for the Burn Pits (TSF-03 and WRRTF-01) selected remedy.

	Citation	Reason	Relevancy[a]
Chemical-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Toxic Substances" IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be monitored and controlled if necessary, during construction of the soil cover and installation of the groundwater monitoring system.	A
	"Toxic Air Emissions" IDAPA 16.01.01.585 and .586		
Idaho Groundwater Quality Rule (Primary Drinking Water Standards	IDAPA 16.01.11.200	Leachate from this site must not adversely impact groundwater quality; standards for groundwater quality must be met.	A
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust generated during construction of the soil cover and installation of the groundwater monitoring system.	A
Idaho Solid Waste Management Rules and Standards	"Landfills" IDAPA 16.01.06.006.02(a), .03(b), .04, .05, and .06(b)	If additional analysis indicates the waste in the pits is not RCRA hazardous, then the pits will be closed and maintained in accordance with the Idaho solid waste landfill regulation.	A
Resource Conservation and Recovery Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD must be made for any waste generated during construction of the soil cover and installation of the monitoring system.	A
	"Manifest" IDAPA 16.01.05.006 (40 CFR 262 Subpart B)	Required for any hazardous waste generated during construction of the soil cover and installation of the monitoring system that has to be sent off-Site for treatment and/or disposal.	A

Table 9-2. (continued).

	Citation	Reason	Relevancy[a]
	"Pre-Transportation Requirements" IDAPA 16.01.05.006 (40 CFR 262.30 – 262.33)		
RCRA – Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"General Waste Analysis" IDAPA 16.01.05.008 (40 CFR 264.13 (a)(1-3))	Analysis requirements apply to secondary waste generated during construction of the cover and installation of the groundwater monitoring system, if required	A
	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	If the waste in the pits is determined to be RCRA hazardous through additional sampling and analysis, measures must be taken to restrict access to the site during construction and the postclosure care period.	
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	If the waste in the pits is determined to be RCRA hazardous through additional sampling and analysis, regular inspections must be performed.	A
	"Personal Training" IDAPA 16.01.05.008 (40 CFR 264.16)	All personnel involved in construction of the cover and installation of the groundwater monitoring system must be trained if the waste in the pits is determined to be RCRA hazardous.	A
	"Preparedness and Prevention" IDAPA 16.01.05.008 (40 CFR 264 Subpart C)	Applies to construction of the soil cover, installation of the monitoring system, and decontamination activities if the waste in the pits is determined to be RCRA hazardous.	A
	"Contingency Plan and Emergency Procedures" IDAPA 16.01.05.008 (40 CFR 264 Subpart D)	Applies to construction of the soil cover, installation of the monitoring system, and decontamination activities if the waste in the pits is determined to be RCRA hazardous.	A
	"Groundwater Protection Standard" IDAPA 16.01.05.008 (40 CFR 264.92)	If the waste in the pits is determined to be RCRA hazardous through additional sampling and analysis groundwater protection standards and a monitoring program must be established.	A

Table 9-2. (continued).

Citation	Reason	Relevancy[a]
"Hazardous Constituents" IDAPA 16.01.05.008 (40 CFR 264.93)		A
"Concentration Limits" IDAPA 16.01.05.008 (40 CFR 264.94)		A
"Point of Compliance" IDAPA 16.01.05.008 (40 CFR 264.95)		A
"Groundwater Monitoring Requirements" IDAPA 16.01.05.0084 (40 CFR 264.97)		A
"Detection Monitoring Program" IDAPA 16.01.05.008 (40 CFR 264.98 (a-f)		A
"Equipment Decontamination" IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during construction of the soil cover and installation of the groundwater monitoring system must be decontaminated if hazardous waste is contacted.	A
"Use and Management of Containers" IDAPA 16.01.05.008 (40 CFR 264.171 – 177)	Applicable to any hazardous waste generated during construction of the soil cover and installation of the groundwater monitoring system that is managed in containers.	A
"Closure and Post Closure Care of Landfills" IDAPA 16.01.05.008 (40 CFR 264.310(a)(1-5) and 40 CFR 264.310(b)(1,4,5,6))	If the waste in the pits is determined to be RCRA hazardous through additional sampling and analysis, design and maintenance requirements for the soil cover and groundwater monitoring system must be met, and institutional controls imposed.	A

Table 9-2 (continued).

	Citation	Reason	Relevancy[a]
To-Be-Considered			
Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities	EPA Guidance Document.		
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate.

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

Table 9-3. ARARs for the Burn Pits (TSF-03 and WRRTF-01) contingent remedy.

Category	Citation	Reason	Relevancy[a]
Chemical-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Toxic Substances" IDAPA 16.01.01.161	The release of carcinogenic and noncarcinogenic contaminants into the air must be established before start of construction, controlled, if necessary, and monitor during soil and waste excavation, waste treatment if performed, and equipment decontamination.	A
	"Toxic Air Emissions" IDAPA 16.01.01.585 and .586		
NESHAPs	"Radionuclide Emissions from DOE Facilities" 40 CFR 61.92	Limits exposure of radioactive contamination release to 10 mrem/yr for the off-Site receptor, and establishes monitoring and compliance requirements.	A
	"Emission Monitoring: 40 CFR 61.93		
	"Emission Compliance" 40 CFR 61.94(a)		
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust during excavation and removal of waste from the pits.	A
Requirements for Portable Equipment	IDAPA 16.01.01.500.02	Portable equipment for waste removal and treatment, if performed on-Site, and any portable support equipment must be operated to meet state and federal air emissions rules.	A
Resource Conservation and Recover Act (RCRA) – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD is required for soils and waste excavated for disposal and treatment (if requirement), and any secondary waste generated during remediation	A

Table 9-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Manifest" IDAPA 16.01.05.006 (40 CFR 262 Subpart B)	Establishes requirements for transporting hazardous waste to treatment and/or disposal site.	A
	"Pre-Transportation Requirements" IDAPA 16.01.05.006 (40 CFR 262.30 – 262.33		
RCRA – Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Units	"General Waste Analysis" IDAPA 16.01.05.008 (40 CFR 264.13 (a)(1-3))	Analysis requirements apply to soils and waste excavated for treatment and/or disposal, and secondary waste generated during remediation.	A
	"Security of Site" IDAPA 16.01.05.008 (40 CFR 264.14)	If the soils and/or waste in the pits is determined to be RCRA hazardous, then measures must be taken to restrict access to the site during soil excavation, waste removal, treatment, if performed, and equipment decontamination.	A
	"General Inspections" IDAPA 16.01.05.008 (40 CFR 264.15)	If the soils and/or waste in the pits are determined to be RCRA hazardous, then regular inspections must be performed during remediation.	A
	"Personnel Training" IDAPA 16.01.05.008 (40 CFR 264.16)	If the soils and/or waste in the pits are determined to be RCRA hazardous, then all personnel involved in soil and waste excavation, treatment if performed, and equipment must be trained.	A
	"Preparedness and Prevention" IDAPA 16.01.05.008 (40 CFR 264 Subpart C)	If the soils and/or waste in the pits is determined to be RCRA hazardous, then these regulations will apply to soil and waste excavation, treatment, if performed, and decontamination activities.	A
	"Contingency Plan and Emergency Procedures" IDAPA 16.01.05.008 (40 CFR 264 Subpart D)	If the soils and/or waste in the pits is determined to be RCRA hazardous, then these regulations will apply to soil and waste excavation, treatment if performed, and decontamination activities.	A

Table 9-3. (continued).

Category	Citation	Reason	Relevancy[a]
	"Equipment Decontamination" IDAPA 16.01.05.008 (40 CFR 264.114)	All equipment used during remediation must be decontaminated if hazardous waste is contacted.	A
	"Use and Management of Containers" IDAPA 16.01.05.008 (40 CFR 264.171 – 177)	Applicable to any RCRA hazardous soils, waste, and secondary waste generated during remediation, which is managed in containers.	A
	"Staging Piles" IDAPA 16.01.05.008 (40 CFR 264.554)	Applicable to any RCRA hazardous soils, waste, and waste from the pits that are to be staged in piles during remediation.	A
	"Miscellaneous Units (only if treatment is required to meet LDRs)" IDAPA 16.01.05.008 (40 CFR Subpart X (except 264.603))	Requirements for an on-Site treatment system for the soils and/or waste, if required.	A
RCRA – Land Disposal Restrictions	"LDR Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.40(a)(b)(e))	The waste in the pits must be treated if necessary, to meet LDR criteria before disposal.	A
	"Treatment Standards for Hazardous Debris" IDAPA 16.01.05.011 (40 CFR 268.45(a)(b)(c)(d))		A
	"Universal Treatment Standards" IDAPA 16.01.05.011 (40 CFR 268.48(a))		A
	"Alternative Treatment Standards for Contaminated Soil" IDAPA 16.01.05.011 (40 CFR 268.49)	Applies to any RCRA hazardous soils that is to be removed from the pits for disposal at an approved facility on the INEEL or off the INEEL.	A
	"CERCLA Off-Site Policy" 40 CFR 300.440		A

Table 9-3 (continued).

Category	Citation	Reason	Relevancy[a]
To-Be-Considered			
Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities	EPA Guidance		
Institutional Controls	Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; RA = relevant and appropriate

NESHAPs = National Emission Standards for Hazardous Air Pollutants

IDAPA = Idaho Administrative Procedures Act

9.2 Fuel Leak

The Fuel Leak site (WRRTF-13) (see Figure 9-2) was contaminated by leaks from tanks and the associated piping. The tanks supplied diesel fuel and heating oil to buildings within the facility. Several tanks and the transfer lines, along with contaminated soil, were removed and disposed of in the early 1990s; the excavated areas were backfilled with clean soil. Some contamination remains in soil below and adjacent to several buildings currently in use. The estimated volume of contaminated soil within the top 3 m (10 ft) of soil is 300 m^3 (400 yd^3). Since the contamination is within the top 3 m (10 ft) of soil, the site may pose an imminent and substantial endangerment to human health and the environment.

Currently, the site is administratively controlled with signs that identify it as a CERCLA site. No activities can be performed at the site without contacting the INEEL Environmental Restoration Program. The purpose of these controls is to keep worker exposures ALARA, and to prevent the spread of contaminated soil.

9.2.1 Summary of Site Risks

A HHRA and an ERA were conducted for the Fuel Leak site. Calculation of numeric health risk values for the site COPCs was not possible because there is not toxicity data available. Instead, State of Idaho residential guidelines were used to determine the need for cleanup. If concentrations are greater than cleanup goals, then an imminent and substantial endangerment to human health and the environment is present. A detailed discussion of the methods used in the risk assessment process is presented in Section 6 of this ROD. Detailed information about the results of the Fuel Leak HHRA and ERA are presented in Sections 6 and 7 of the OU 1-10 RI/FS Report.

9.2.1.1 Human Health Risks. None of the contaminants detected at the site have available human health toxicity information, so risks for the site were not calculated in the BRA. However, total petroleum hydrocarbon (TPH) concentrations at the site exceed the State of Idaho cleanup goal of 1,000 mg/kg TPH diesel.

9.2.1.2 Ecological Risk Assessment. The average TPH diesel concentration at the Fuel Leak is 9,151 mg/kg. The HQs (>1.0) ranged from 2.2 for mammalian insectivores (e.g., Townsend big-eared bat) to 151 for mammalian insectivores (e.g., northern grasshopper mouse). The HQs for amphibians, birds, reptiles, and plants could not be determined because target risk values (TRVs) could not be derived for these receptors.

9.2.2 Summary of Alternatives

In accordance with CERCLA Section 121, the OU 1-10 FS identified and evaluated remediation alternatives. Any selected alternative had to achieve the remediation goal as outlined in the State of Idaho RBCA Guidance. The State of Idaho RBCA Guidance was enacted on January 1, 1997, and has superceded the old TPH cleanup guidance of 1,000 mg/kg TPH diesel, which was used in the OU 1-10 BRA. The principal ARAR evaluated for the Fuel Leak was the State of Idaho RBCA Guidance. In addition to the "No Action" alternative, four alternatives were evaluated to remediate the Fuel Leak site:

- Alternative 1: Limited Action
- Alternative 2: Containment

- Alternative 4: Excavation and Land Farming

- Alternative 5: In Situ Biodegradation using Bioventing.

Details of the alternatives considered and the evaluation process are included in Sections 10 and 11 of the OU 1-10 RI/FS and Sections 4 and 5 of the FS Supplement.

9.2.2.1 Alternative 1: Limited Action. Under Alternative 1, existing management practices, including institutional controls and environmental monitoring would continue. The cost for this alternative is $1.4 million.

Alternative 1 would accomplish the site RAOs in a long timeframe because contamination would be left in place. To accomplish the RAOs, long-term institutional controls must be supplemented to protect future occupational and residential land use. Institutional controls are a primary component of this alternative.

Alternative 1 would protect human health and the environment and comply with the regulations. Under Alternative 1, contamination would be left in place, resulting in low long-term effectiveness. Short-term effectiveness would be high, because workers would not be exposed to contaminants. This alternative would not reduce toxicity, mobility, or volume through treatment. Implementability would be high because the management practices are already in place.

9.2.2.2 Alternative 2: Containment. Alternative 2 would cover the contaminated site with a native soil cover. The cover would consist of a layer of INEEL soil with surface vegetation. Institutional controls would be required to maintain the cover. The cost for this alternative is $1.6 million.

Alternative 2 would accomplish the site RAOs in a short timeframe because a cover can be constructed in a short time. To maintain the RAOs, long-term institutional controls must be implemented to protect future occupational and residential land use.

Alternative 2 would protect human health and the environment and would comply with the regulations. Contamination would be left in place; however, it would be contained, resulting in moderate long-term effectiveness. This alternative would not reduce toxicity, mobility, or volume through treatment; however, it would prevent the spread of contamination from the site. There would be a possibility for worker exposure during construction of the cover, reducing the short-term effectiveness. Implementability of this alternative would be low since the alternative could not be implemented until some time in the future when nearby buildings are removed.

9.2.2.3 Alternative 4: Excavation and Land Farming. Under Alternative 4, the contaminated soil would be excavated down to approximately 3 m (10 ft) or to the maximum depth at which contaminant concentrations exceed FRGs, whichever is less. Sampling would be performed before excavation to determine what volume of contaminated waste must be removed, based on the State of Idaho RBCA Guidance. Clean soil would be used to backfill the site. The contaminated soil would undergo land farming at the CFA Land Farm. The cost for this alternative is $0.6 million.

Alternative 4 would accomplish the site RAOs in a short timeframe because contamination would be permanently removed. It is expected that no institutional controls would be required after the remedial action, but would be verified by confirmational sampling,

Alternative 4 would protect human health and the environment and would comply with the regulations. Long-term effectiveness would be high because the contaminants would be removed. There would be a possibility for worker exposure during excavation and transportation, reducing the short-term effectiveness. Land farming would reduce toxicity and mobility through treatment. Implementability would be moderate because the site is near existing buildings and structures, and the contamination is under an existing roadway and parking area. The cost of this alternative would be less than the cost of other alternatives considered at this site.

9.2.2.4 Alternative 5: In Situ Biodegradation using Bioventing. Under Alternative 5, the contaminated soil would be remediated through in situ biodegradation. The toxic contaminants would be broken down through aerobic biodegradation by microorganisms naturally present in the soil. To increase the amount of oxygen available for aerobic activity, a network of bioventing wells would be installed. Air would be pumped into the bioventing system to stimulate faster biodegradation. The cost for this alternative is $1.9 million.

Alternative 5 would accomplish the site RAOs in a medium timeframe because contamination will be biologically broken down and reduced. It is expected that no institutional controls would be required after remedial action, but would be verified by confirmational sampling.

Alternative 5 would protect human health and the environment and would comply with the regulations. Long-term effectiveness would be high because the contaminants would be reduced or eliminated. The toxicity and volume would be reduced. Risks to workers and the environment would be moderate. Implementability would be high. The technology uses standard drilling and construction equipment, but additional site characterization will be required to design and implement the bioventing system. The cost would be greater than the other alternatives.

9.2.3 Summary of Comparative Analysis of Alternatives

The following sections summarize the evaluation of the candidate remedial alternatives according to the criteria identified in Section 7.1.3 of this ROD. Detailed comparative analyses can be found in Section 12 of the RI/FS and Section 5 of the FS Supplement. Section 6 of this ROD provides more detail on the individual CERCLA criteria.

9.2.3.1 Threshold Criteria. The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment and compliance with ARARs. All of the alternatives considered for the Fuel Leak (Alternatives 1, 2, 4, and 5) meet the threshold criteria.

9.2.3.2 Balancing Criteria. The five balancing criteria are: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost.

Alternatives 4 and 5 best satisfy the criterion of long-term effectiveness because contamination would be removed. Alternative 2 partially satisfies long-term effectiveness because contamination would be left in place, yet still contained. Alternative 1 least satisfies long-term effectiveness because contamination would be left in place. Reduction of toxicity, mobility, or volume through treatment is best satisfied by Alternatives 4 and 5; Alternative 4 reduces toxicity and mobility through land farming and Alternative 5 reduces toxicity and volume. The reduction criterion is least satisfied by Alternatives 1 and 2 because neither employs treatment. Alternative 1 best satisfies short-term effectiveness because workers will not be exposed to contamination. Alternatives 2, 4, and 5 only partially satisfy short-term effectiveness because of the possibility of worker exposure. Alternatives 1 and 5 best satisfy the

implementability criterion by using management practices already in place or standard techniques and equipment. Implementability is only partially satisfied by Alternative 4 because the site is near existing buildings and the contamination is under an existing roadway. Alternative 2 would least satisfy the implementability criteria because the alternative could not be implemented until nearby buildings are removed. Alternative 4 has the lowest estimated cost and Alternative 5 has the highest estimated cost.

9.2.3.3 *Modifying Criteria.*

The modifying criteria, used in the final evaluation of remedial alternatives, are state and community acceptance. State acceptance is demonstrated by IDHW concurrence with the selected remedial alternative and signature of this ROD. The IDHW was involved in the development and review of the RI/FS Report (DOE-ID 1997b), the Proposed Plans (DOE-ID 1998a and DOE-ID 1998b), the FS Supplement (DOE-ID 1998c), this ROD, and other project activities such as public meetings.

For community acceptance, the factors that are considered include which elements of the alternatives interested persons in the community support, have reservations about, or oppose. The comments received on the Proposed Plan form the record of these opinions and concerns.

Generally, the selected remedy is supported; aspects that were questioned are effectiveness and the plan for phased implementation. The Responsiveness Summary (Part III) portion of this ROD documents the full range and content of the public comments received regarding the recommended action at this site.

9.2.4 Selected Remedy: Alternative 4, Excavation and Land Farming

Based on consideration of the requirements of CERCLA, detailed analysis of alternatives, and public comments, the Agencies selected Alternative 4, Excavation and Land Farming. The selected remedy will satisfy the NCP requirements by using treatment to address the low-level threat posed by the Fuel Leak. The major components of the selected remedy include:

- Sampling the Fuel Leak soil to determine risk-based remediation goals in accordance with the State of Idaho RBCA Guidance (*Risk-Based Corrective Action Guidance Document for Petroleum Releases)* and the Idaho Division of Environmental Quality Guidance (*Information Series # 7: Procedures for Land Treatment of Petroleum Contaminated Soils*), and determine land farming excavation volumes

- Excavating contaminated soil to a maximum of 3 m (10 ft) or the maximum depth that contaminant concentrations are above risk-based remediation goals in accordance with the State of Idaho RBCA Guidance (*Risk-Based Corrective Action Guidance Document for Petroleum Releases*), whichever is less.

- Sampling to ensure contaminated soil exceeding remediation goals has been removed

- Treating the contaminated soil at the CFA Land Farm

- Backfilling excavated area with clean soil, including any stockpiled, then contouring and grading to surrounding soil.

The selected remedy addresses the risks posed by the Fuel Leak site by effectively removing the source of contamination, and thus, breaking the pathway by which a future receptor may be exposed. Because of data limitations from previous sampling efforts and corresponding uncertainties in the risk evaluation, additional sampling will be performed before excavation. The data obtained from this

sampling effort will be evaluated against the Idaho RBCA Guidance to determine the actual risk based remediation goal, and to determine the volume of contaminated soil that must be excavated and land farmed.

Under Alternative 4, the contaminated soil will be excavated down to 3 m (10 ft) or the depth at which contaminant concentrations exceed the remediation goal to be determined from the State of Idaho RBCA Guidance, whichever is less. Confirmation sampling will be performed to ensure that all contaminated soil exceeding the FRG has been removed. The contaminated soil will be transported to the CFA Land Farm to undergo land farming, and the excavation will be backfilled with clean soil.

Based on the results of post remedial action sampling, institutional controls may be required. The controls, if necessary, will provide unrestricted land use in 100 years and will undergo 5-year reviews, as discussed in Section 10. Additional institutional control information is in Section 12. Some changes may be made to the remedy as a result of the remedial design and construction process that result from the engineering design process.

9.2.4.1 Estimated Costs for the Selected Remedy. The estimated capital and maintenance cost for implementing the selected remedy for the Fuel Leak is $572,927. The costs are presented in net present value, which allows for equal comparison of long-term and short-term alternatives while factoring in inflation. Details of the cost estimates are presented in Appendix J of the RI/FS report and summarized in Table 9-4.

9.2.4.2 Protection of Human Health and the Environment This alternative would provide for long term overall protection of human health and the environment. The removal of petroleum contaminated soils to a depth of 3 m (10 ft) bgs would eliminate potential long-term human health and environmental exposures to the site's contamination. As a result, this alternative would satisfy the specified RAOs for the site.

9.2.4.3 Compliance with ARARs and TBCs. The selected remedy meets the identified ARARs, as shown in Table 9-5.

9.2.4.4 Cost Effectiveness. The selected remedy is cost-effective because it provides overall effectiveness in meeting the RAOs proportionate to its costs. When compared to other potential remedial actions, the selected remedy provides the best balance between cost and effectiveness in protecting human health and the environment.

Table 9-4. Cost estimate summary for the Fuel Leak (WRRTF-13) selected remedy.

		$ Fiscal Year (FY)-97
FFA/CO Management and Oversight		
	WAG 1 – Management	212,778
Remediation Oversight		
	Construction Oversight	13,769
	Construction Project Management	22,948
	Remedial Action Document Preparation	24,233
	Remedial Action Report	10,880
	Packaging, Shipping, Transportation Documentation	19,512
	WAG-Wide Remedial Action 5-Year Review	N/A
Remedial Design		
	Title Design Construction Document Package	19,920
	Remedial Design Documentation per WAG 1 Baseline	31,928
	Prefinal Inspection Report	8,000
Remedial Action		
	Site Preparation	10,000
	Excavate and Transport Contaminated Soil to Land Farm	19,000
	Dispose of Treated Soil	11,400
	Clean Fill and Reseeding	24,840
	Sampling and Analysis of Soil	5,000
	Subcontractor Indirect Costs	45,189
CAPITAL COST SUBTOTAL		479,397
	Contingency @ 30%	143,819
TOTAL CAPITAL COST IN FY-97 DOLLARS		623,216
TOTAL CAPITAL COST IN NET PRESENT VALUE		572,927
Operations		
	WAG 1 – Management	N/A

Table 9-4. (continued).

		$ Fiscal Year (FY)-97
	Annual Operation and Maintenance Reports	N/A
Decontamination and Dismantlement		N/A
Surveillance and Monitoring		N/A
OPERATION AND MAINTENANCE (O&M) COST SUBTOTAL		N/A
	Contingency @ 30%	N/A
TOTAL O&M COST IN FY-97 DOLLARS		N/A
TOTAL O&M COST IN NET PRESENT VALUE		N/A
TOTAL PROJECT COST IN NET PRESENT VALUE		572,927

Table 9-5. ARARs for the Fuel Leak (WRRTF-13) selected remedy.

Title	Citation	Reason	Relevancy[a]
Chemical-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Toxic Substances" IDAPA 16.01.01.161 "Demonstrations of Preconstruction Compliance with Toxic Standards" IDAPA 16.01.01.210 "Toxic Air Emissions" IDAPA 16.01.01.585 and .586	The release of carcinogenic and noncarcinogenic contaminants into the air must be estimated before start of excavation, controlled, if necessary, and monitored during remediation.	A
Idaho Groundwater Quality Rule (Primary Drinking Water Standards)	IDAPA 16.01.11.200 (40 CFR 141)	Any contamination remaining at the site after remediation must not adversely affect groundwater quality; groundwater quality standards must be met.	A
Petroleum Release Response and Corrective Action (RBCA)	IDAPA 16.01.02.852	After additional sampling, an analysis based on the Idaho RBCA criteria will be performed to determine the cleanup criteria for the petroleum contaminated soils.	A
Resource Conservation and Recovery Act (RCRA) – Identification and Listing of Hazardous Waste	"Exclusions" IDAPA 16.01.05.005 (40 CFR 261.4(b)(10))	Any excavated soils that fail TCLP for organics (D018-D043) will not be considered hazardous waste.	RA
Action-Specific ARARs			
Rules for the Control of Air Pollution in Idaho	"Fugitive Dust" IDAPA 16.01.01.650 and .651	Requires control of dust generated during excavation and transport of soil.	A
RCRA – Standards Applicable to Generators of Hazardous Waste	"Hazardous Waste Determination" IDAPA 16.01.05.006 (40 CFR 262.11)	A HWD must be made for any waste generated during excavation.	A

Title	Citation	Reason	Relevancy[a]
To-Be-Considered			
Institutional Controls	Region 10 final Policy on the Use of Institutional Controls at Federal Facilities	Applies to contamination left in place or remaining above 1E-04 risk.	

a. A = applicable; R = relevant and appropriate

IDAPA = Idaho Administrative Procedures Act

TCLP = toxicity characteristic leaching procedure

10. 5-YEAR REVIEWS

At sites where institutional controls are required, a review will be conducted every 5 years after the first remedial action is completed to ensure protectiveness to human health and the environment and to assess the need for future long-term environmental monitoring and administrative/institutional controls. These comprehensive statutory 5-year reviews will be conducted to evaluate factors such as contaminant migration from those sites, effectiveness of institutional controls, and overall effectiveness of the remedial actions, which will be outlined in the institutional control plan.

The possibility exists that contaminated environmental media not identified by the INEEL FFA/CO or in this comprehensive investigation will be discovered in the future as a result of routine operations, maintenance activities, D&D activities, and review of previous D&D actions at TAN. New sites will be addressed using the process for new site inclusion as defined in the FFA/CO and will be assessed and remediated pursuant to the process agreed upon by the agencies at the time of the new site identification. Where appropriate, the RAOs and FRGs identified in this ROD will be used to complete potential cleanup activities. Upon discovery of a new site the Agencies will determine the appropriate response action to be taken in accordance with the FFA/CO and this ROD.

11. DOCUMENTATION OF SIGNIFICANT CHANGES

The CERCLA Section 117(b) requires an explanation of changes from the preferred alternatives originally presented in the Proposed Plan to be provided in this ROD.

11.1 Preferred Alternative Changes from the RI/FS to Proposed Plan

A Proposed Plan describing the results of the comprehensive RI/FS was released in February 1998 to identify the Agencies' preferred alternative for the eight sites and the Mercury Spill Area. Public comments received on the Proposed Plan (including a recommendation from the INEEL CAB) raised concerns about the readability, organization, and clarity of the Proposed Plan as well as several technical questions. In response to the comments, the feasibility study and Proposed Plan, were reexamined to address the technical questions and improve readability. A revised Proposed Plan and an OU 1-10 FS Supplement were issued in November 1998.

The FS Supplement addressed several technical issues, reevaluated potential remedies, and developed additional alternatives. The additional remedies developed represent either new technologies or modifications to technologies, or reevaluations of existing technologies based on new information. Sites at which additional supplementary work was carried out included the PM-2A Tanks (TSF-26), the Burn Pits (TSF-03 and WRRTF-01), and the Fuel Leak (WRRTF-13).

At five sites, the PM-2A Tanks, the two Burn Pits, the Mercury Spill Area, and the Fuel Leak, the preferred alternatives were changed from the originally proposed alternatives in February 1998. The changes are described below.

11.1.1 PM-2A Tanks (TSF-26)

The February 1998 Proposed Plan specified the preferred alternative as Alternative 4a – Soil Excavation, In Situ Treatment of Tank Contents, and On-Site Soil Disposal. The Agencies determined through additional evaluation that the preferred alternative of In Situ Stabilization would be difficult to implement and would not be cost-effective. In addition, hazardous waste constituents in the tank sludge may require disposal in a disposal facility approved to accept RCRA waste. The Agencies subsequently changed the preferred alternative to Alternative 3d – Soil Excavation, Tank Content Removal, Treatment, if required, and On-Site Disposal. This change was presented to the public in the Revised (November 1998) Proposed Plan and is the Agencies' selected remedy for the site.

11.1.2 Burn Pits (TSF-03 and WRRTF-01)

The February 1998 Proposed Plan identified the preferred alternative for the Burn Pits as Alternative 1 – Limited Action. Reanalysis of the existing data showed that the previously preferred alternative would not meet the goal for overall protectiveness after 100 years was uncertain. The Agencies subsequently changed the preferred alternative to Alternative 2 – Native Soil Cover with the contingency of implementing Alternative 3 if the cover design would not be cost effective. This change was presented to the public in the Revised (November 1998) Proposed Plan and is the Agencies' selected remedy for the site.

11.1.3 Mercury Spill Area (TSF-08)

The February 1998 Proposed Plan identified the preferred alternative for the Mercury Spill Area as Alternative 3 – Excavation and Off-Site Disposal. The Agencies subsequently detennined that a

treatability study will be conducted at this site to evaluate plant uptake factors and rates for phytoremediation. Based on the results of this study, planned to be conducted under WAG 10, a determination will be made as to subsequent action, if required. If remedial action is required at this site, the action will be performed and documented, as necessary. The Agencies will determine the appropriate response action to be taken in accordance with the FFA/CO and this ROD. This change was presented to the public in the Revised (November 1998) Proposed Plan and is discussed in Part II, Sections 1 and 4 of this ROD.

11.1.4 Fuel Leak (WRRTF-13)

The February 1998 Proposed Plan specified the preferred alternative as Alternative 1 – Limited Action. Comments were received that indicated that in situ bioremediation techniques could be more appropriate for this site. In addition, the Agencies determined that the quantities and types contamination had not been fully assessed based on the new State of Idaho RBCA Guidance. The Agencies subsequently changed the preferred alternative to Alternative 4 – Excavation and Land Farming. This change was presented to the public in the Revised (November 1998) Proposed Plan and as the Agencies' selected remedy for the site.

In compliance with statutory requirements to ensure the public has the opportunity to comment on major remedy selection decisions, a revised Proposed Plan (DOE-ID 1988a) was prepared presenting the new preferred alternatives. The revised Proposed Plan was made available to the public in November 1998. Responses to public comments on both the initial and revised Proposed Plans are included in the Responsiveness Summary portion of this ROD (Part III).

11.2 Changes to the V-Tanks (TSF-09 and TSF-18) Preferred Alternative

Since the RI/FS Report was prepared, and the Proposed Plan being reissued, it was determined that several important assumptions regarding in situ vitrification (ISV) of the V-Tanks were no longer appropriate. In addition, new information was obtained from an ISV vendor, regarding costs for design support, site preparation, equipment procurement and mobilization, and vitrification operations. Consequently, a revised cost estimate was prepared that would more accurately reflect the cost for implementing the ISV alternative for the V-Tanks. The changes and assumptions are listed below:

1. It was stated in the RI/FS that V-Tanks waste would be delisted after treatment and a longer-contained-in determination obtained for the surrounding vitrified soils. Therefore, the waste and soils after treatment would be radioactive waste only and not subject to any RCRA landfill closure requirements. Hence the original cost estimate did not provide for a RCRA compliant cover or monitoring for any RCRA constituents. After negotiations on ARARs for the V-Tanks, the Agencies agreed that delisting will not be pursued and a cover would be constructed and maintained as specified in 40 CFR 264.310. Costs for constructing and maintaining a cover and installing and operating a monitoring system were not included in the original cost estimate. The revised cost estimate for Alternative 4 includes construction of a small soil cap over the tank site with 100 years of monitoring and maintenance.

2. During preparation of the FS, it was assumed the buildings adjacent to the tank site would have been removed and that the piping associated with the tank system cut and capped by the D&D program. It is now known that the adjacent buildings would be in place and occupied at the time ISV is performed. Because of the proximity of the buildings to the tank

site, it would be necessary to protect the foundations with a thermal shield before ISV. Costs for isolating the tank system for ISV and installing the heat shield were not included in the original cost estimate. These costs are included in the revised estimate.

3. In the FS, it is assumed that 1,372 m^3 (1,500 yd^3) of contaminated soil requires remediation. During ISV of the tanks using the planar melt method, only the soils immediately surrounding the tanks would be vitrified. In order to treat the soils above the tanks, it would be necessary to perform a top-down melt after the tanks are vitrified. Removal and disposal of the contaminated soil was not considered in the ISV alternative and the original cost estimate did not include a cost for performing a top down melt. The revised cost estimate provides for a top down melt to be performed after the tanks are vitrified, which would leave about 594 m^3 (650 yd^3) of contaminated soil untreated to be excavated and disposed at an approved facility, such as the proposed INEEL soil repository.

4. Secondary waste would be generated during ISV of the tanks. The original cost estimate did not account for treatment and disposal of secondary waste generated. For the revised cost estimate, treatment and disposal of secondary waste was included.

5. The original cost estimate included funding to perform a cold-test demonstration of ISV on a tank. Since the treatability study was considered to be successful, no further cold testing is required. This cost was eliminated from the revised cost estimate.

6. An ISV vendor provided a list of cost assumptions for performing ISV of the V-Tanks in the *Treatability Study For Planar In Situ Vitrification of INEEL Test Area North V-Tanks* (INEEL 1998b). These assumptions clarified the responsibilities of the vendor and DOE contractor. Adjustments to the cost estimate were made to reflect the tasks to be performed by the vendor, contractor, and subcontractors and the materials to be provided.

Since the revised Proposed Plan was issued, three key issues have been raised: (1) addition of LDRs, RCRA closure, postclosure and institutional controls as ARARs, (2) results of the ISV treatability study, which provided new specifications for the remedial action, and (3) the cost estimate for Alternative 4 (ISV) increased by approximately 50% due to several different factors and changes to initial FS assumptions as mentioned earlier. In addition, options for Ex Situ Treatment of the V-Tank contents have become available, thus making Alternative 2, Soil Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal, a more implementable alternative. An advantage of removing the contaminated media above the FRG is this would eliminate the need for RCRA closure and post closure care at the site (potentially releasing the land for unrestricted land use), which would result in significant cost savings. Based on these key issues and the changes to the ISV assumptions as mentioned earlier, the ex situ treatment options were re-evaluated and the cost re-estimated. The implementability of ex situ treatment is now consideredmoderate, and is also more cost-effective than ISV. Hence Altemative 2, Soil Tank Removal, Ex situ Treatment of Tank Contents, and Disposal, is the Agencies selected remedy for the V-Tanks site. Since LDRs will be an ARAR for the V-Tanks, Alternative 3 as outlined in the Proposed Plan will not meet this ARAR.

11.3 Additional Changes

The following changes, although not "significant," are discussed below to accurately reflect modifications made from the revised Proposed Plan to the ROD.

The RAO identified in the revised Proposed Plan for the Fuel Leak site was: "Prevent direct exposure to total Petroleum hydrocarbon constituents at concentrations over 1,000 mg/kg, in accordance with the State of Idaho RBCA Guidance." The 1,000 mg/kg TPH concentrations was incorrectly referenced to the State of Idaho RBCA Guidance when in fact the 1,000 mg/kg total petroleum hydrocarbon concentrations is from the Idaho UST Information Series: #2. The RAO has been changed in this ROD to "Prevent exposure to petroleum hydrocarbon constituents in accordance with the State of Idaho Risk-Based Corrective Action Guidance." This change is described in Part II, Sections 6.4.1 and 9.2.2 of this ROD.

The RAO identified in the revised Proposed Plan for the V-Tank and PM-2A Tank contents was to prevent release to the environment of COCs from the V-Tank and PM-2A Tank contents. Since the V-Tank and PM-2A Tank contents never had a risk assessment performed, there are no COCs for this waste. Therefore, the revised RAO is to prevent release to the environment of the V-Tank and PM-2A Tank contents.

The selected remedies for the V-Tanks, PM-2A Tanks, and the Soil Contamination Area South of the Turntable uses excavation and disposal as part of the remedy. If the on-Site option is not available at the time of the remedial action, contaminated material may be disposed of at an off-Site facility. At the time of the remedial action, a cost comparison will be performed to determine whether on-Site or off-Site disposal is most economic. The cost estimates presented in this ROD only take into account on-Site disposal. The discussion of the selected remedies were clarified to specify that contaminated material may be disposed at an off-Site disposal facility.

The cost estimates, given in Tables 7-2, 7-5, 8-2, 8-5, 9-1, and 9-4 of this ROD, present cost estimates that are lower than those in the RI/FS and the Proposed Plans for the selected remedy. The reason for the lower cost estimates is the application of an "economy of scale" method to estimate the costs. Rather than estimating each site's costs individually (as was done in the RI/FS and Proposed Plans), the revised cost estimates group the sites and combine select work elements such as management and document preparation. Cost estimates were not prepared for the RI/FS and Proposed Plans for the "No Further Action" sites and the disposition of IDW. Cost estimates were prepared between the release of the November Proposed Plan and the finalization of this ROD, and are presented in Section 12, Tables 12-3 and 12-4.

Sites IET-04, TSF-10, TSF-28, TSF-29, TSF-42, and TSF-43 were identified as "No Action" sites in the WAG 1 Proposed Plan. Also, TSF-39 was identified as a "No Action" site in the Final 1-07B ROD. These sites are now classified as "No Further Action" because of new guidance from EPA Region 10 (EPA 1999), and will require institutional controls as described in Section 12 as a best management practice. Calculation of current residential risk, given for some sites in Table 12-1, was performed using the future residential risk from the BRA and back calculating the current residential risk based on radioactive decay.

12. ADDITIONAL COMPONENTS OF THE RECORD OF DECISION

Several activities will be implemented at WAG 1 to complete the selected remedy, in addition to the remediation that will be applied to specific sites. These additional activities are institutional controls and the disposition of IDW, and are discussed in the following sections.

12.1 Institutional Controls

In addition to and as part of the selected remedial actions identified in Sections 7, 8, and 9 of this ROD, institutional controls will be maintained at selected sites within WAG 1 because residual contamination will preclude unrestricted land use. The sites that will be managed, either fully or partially, by institutional controls are discussed below. Future WAG 1 activities will include the development of a WAG 1 institutional control plan.

12.1.1 Institutional Controls in Waste Area Group 1

Institutional controls will be maintained by the DOE at any CERCLA site at the INEEL where residual contamination precludes unrestricted land use. "No Action" sites are sites where the current residential, current occupational, and future residential risks are all less than or equal to 1E-04. "No Action" sites do not require institutional controls and allow unrestricted land use. Five-year reviews are not required. "No Further Action" sites require institutional controls and will undergo 5-year reviews as described in this ROD. "No Further Action" sites have a current residential risk greater than 1E-04, but a current occupational and future residential risk less than or equal to 1E-04. "No Further Action" sites can also be sites with acceptable risks, but with notable uncertainty in the risk calculations. These controls will remain in place at each site for at least 100 years or until the site is released for unrestricted use in a 5-year review, as discussed in Section 10 in this ROD.

No additional remediation will be conducted under CERCLA for 83 of the 94 sites identified in WAG 1. However, land-use control will be maintained at seven (plus three subsites of TSF-06 for a total of 10 institutional control areas) of these sites because risk from residual contamination precludes unrestricted land use. Therefore, these sites are identified for institutional controls. Institutional controls may be discontinued during the 5-year review process. The Mercury Spill Area, TSF-08, may require additional remediation under CERCLA, based upon treatability study results.

Institutional controls will be maintained in the interim until the selected remedy has been implemented at all eight sites identified in this ROD for remediation, and will be maintained until remediation is complete. Long-term institutional control requirements for these sites will be determined based on the analysis of post-remediation confirmation samples.

In accordance with INEEL land-use plans (DOE-ID 1997a) DOE will provide institutional controls for sites subject to land-use restrictions over the next 100 years unless a 5-year review concludes that unrestricted land use is allowable. After 100 years, DOE may no longer manage INEEL activities and controls will take the form of land-use restrictions. Though land use after 100 years is highly uncertain, it is likely that industrial applications will continue at the INEEL and WAG 1. The Hall Amendment of the National Defense Authorization Act of 1994 (Public Law 103-160) requires concurrence from EPA on the lease of any National Priorities List sites during the period of DOE control and CERCLA [42 USC 9620 § 120(h)] requires that the state be notified of a lease involving contamination. When DOE no longer manages INEEL activities and controls are needed, CERCLA [42 USC 9620 § 120(h)] requires that DOE indicate the presence of contamination and any restrictions in property transfer documentation.

Institutional controls will be applied initially to 18 (TSF-06 has four separate areas that require institutional controls, for a total of 21 areas of institutional controls) of the 94 sites in WAG 1, and will not be required for the other 76 sites. A summary of the analysis conducted to identify "No Action" and institutional control sites is presented in Table 12-1. A preliminary description of the controls that will apply is provided in Table 12-2 and the estimated costs for implementing and maintaining institutional controls for the "No Further Action" sites for 100 years are summarized in Table 12-3. An institutional control plan for WAG 1 will be prepared in conjunction with the development of remedial action/remedial design documents to identify the specific measures that will be implemented at each site. The list of sites requiring institutional controls will change over time as remediation is completed and 5-year reviews are conducted.

12.1.2 Institutional Control Plan for Waste Area Group 1

A comprehensive approach for establishing, implementing, enforcing, and monitoring institutional controls at the INEEL, including WAG 1, will be developed in accordance with EPA Region 10 policy (EPA 1999). The comprehensive INEEL approach will contain the following elements specifically for WAG 1 in accordance with the EPA policy:

- A comprehensive listing of all areas or locations in WAG 1 that have or will have institutional controls for protection of human health or the environment. The list will include sites within WAG 1 covered by any and all decision documents. The information on this list will include, at a minimum, the location of the area, the objectives of the restriction or control, the time frame for which the restrictions apply, and the tools and procedures that will be applied to implement the restrictions or controls and to evaluate the effectiveness of these restrictions or controls.

- Cover and legally bind where appropriate, all entities and persons, including, but not limited to, employees, contractors, lessees, agents, licensees, and invitees relevant to WAG 1 institutional controls.

- Cover all activities, and reasonably anticipated future activities, including, but not limited to, future soil disturbance, routine and nonroutine utility work, well placement and drilling, grazing activities, groundwater withdrawals, paving, construction, renovation work or structures, or other activities that could occur on CERCLA sites with institutional controls.

- A tracking mechanism that identifies all land areas under restriction or control.

- A process to promptly notify both EPA and the State of Idaho before any anticipated change in land-use designation, restriction, land users, or activity for any institutional control required by a decision document.

In addition, the comprehensive WAG 1 approach will incorporate by reference the INEEL facility-wide land-use plan, installation maps, a comprehensive permitting system, and other installation policies and orders.

Table 12-1. "No Action" sites and sites requiring institutional controls in Waste Area Group 1.

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
IET-01	IET Gasoline Storage Tank	X	—	OU 1-07B ROD "No Action" site. The tank contents were removed in September 1991. The tank and the associated piping were removed in August 1992. There were no holes in either the tank or the associated piping, and no visually stained or discolored soil was observed in the tank excavation.	Tank system removed; no evidence of contamination.
IET-02	IET Burial Pit Northeast of IET	X	—	FFA/CO "No Action" site. No hazardous materials had been disposed of and no environmental damage was evident from site observation.	No evidence of contamination.
IET-04	IET Stack Rubble Site	—	X[C]	IET-04 contains buried rubble from the IET exhaust stack and monitoring vault. The site currently is buried 4.6 to 6.1 m (15 to 20 ft) bgs after decontamination and decommissioning in 1986 and 1987. Suspected concentrations pose risks >1E-04.	Suspected risk >1E-04.
IET-05	IET Foam Stabilizer Tank	X	—	OU 1-07B ROD "No Action" site. The storage tank and its associated piping were removed in 1990. There were no holes in either the tank or the associated piping, and no visually stained or discolored soil was observed in the tank excavation.	No evidence of contamination.
IET-06	IET Injection Well	X	—	The well was used to discharge treated sanitary sewage and process wastewater; it was converted to a monitoring well in 1980. No potentially hazardous substances were identified in a risk assessment.	No evidence of contamination.
IET-07	IET Hot Waste Tank	X	—	The tank and associated piping were removed in 1985; no holes or leaks were found in the tank and no stained soil was observed in the tank excavation. Surveys did not detect radioactivity above background levels. No reports of releases from tank.	Tank system removed; no evidence of contamination.
IET-08	IET Septic Tank and Filter Bed	X	—	FFA/CO "No Action" site. Cs-137, U-238, and Sr-90 were detected in sludge samples from the tank more than one order of magnitude below risk-based levels; neither of the liquid samples from the septic tank showed detectable levels of radioactivity.	Remaining risk <1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
IET-09	IET Lube Oil Tank	X	—	OU 1-07B ROD "No Action" site. The tank contents were removed in September 1991. The tank and the associated piping were removed in October 1991. Soil samples indicated no traces of contamination.	Tank system removed; no evidence of contamination.
IET-10	IET Diesel Fuel Tank	X	—	OU 1-07B ROD "No Action" site. Removal of the storage tank, its contents, and the associated piping was completed in 1990. Samples detected traces of xylene over three orders of magnitude below risk-based concentrations, and a qualitative risk evaluation indicated that the TPH does not pose an unacceptable risk.	Tank system removed. Remaining risk <1E-04.
IET-11	IET Heating Oil Tank	X	—	OU 1-07B ROD "No Action" site. Removal of the tank, its contents, and the associated piping was completed in 1990. Samples detected traces of ethylbenxene, toluene, and xylene at least three orders of magnitude below risk-based concentrations.	Tank system removed. Remaining risk <1E-04.
LOFT-01	LOFT Diesel Fuel Spills	X	—	OU 1-07B ROD "No Action" site. The contaminated soil in the ditch was excavated and removed in 1990. Soil sample analysis detected traces of toluene, ethylbenzene, and xylene over three orders of magnitude below risk-based concentrations, and a qualitative risk evaluation indicated that the TPH does not pose an unacceptable risk.	Soil contamination removed. Remaining risk <1E-04.
LOFT-02	LOFT Disposal Pond	X	—	Unlined disposal pond that has received industrial, cooling, and sanitary wastewater since 1975. Currently managed by SMC Operations. Risk determined in Track 2 risk evaluation is in the E-05 range.	Active disposal pond; risk is <1E-04.
LOFT-03	LOFT Rubble Pit South of LOFT Disposal Pond	X	—	OU 1-07B ROD "No Action" site. Construction debris was removed and disposed of at the Central Facilities Area (CFA) landfill in 1987 or 1988. No hazardous or radioactive material was found during the cleanup operation. No asbestos-containing material was encountered.	No evidence of contamination.
LOFT-04	LOFT Injection Well	X	—	FFA/CO "No Action" site. LOFT-04 was used only for disposal of uncontaminated wastewater resulting from LOFT operations.	No evidence of contamination.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
LOFT-05	LOFT Two Fuel Tanks	X	—	OU 1-07B ROD "No Action" site. The tank contents were removed in 1991; the tanks and associated piping remain in place pending future use. No evidence of suspected or known releases.	No evidence of contamination.
LOFT-06	LOFT Slop Tank East of TAN-631	X	—	OU 1-07B ROD "No Action" site. Available drawings and documentation indicate the tank contents were removed about 1965 and the tank was filled with sand. An asphalt road and parking lot now cover the site. No surface contamination was visible in a 1966 aerial photograph before the road was built; geophysical surveys in 1990 and 1993 did not locate the tank.	No evidence of contamination.
LOFT-07	LOFT Foam Solution Tank	X	—	The contents of the tank were sampled in 1991, 1993, and 1994. Based on sampling results, the tank and residual waste contents were removed in July 1994 and properly disposed. Concentration detected Cr and Sr-90 at least one order of magnitude below risk-based concentrations.	Remaining risk <1E-04.
LOFT-08	LOFT Tank in Borrow Pits	X	—	OU 1-07B ROD "No Action" site. In January 1990, the tank and the associated piping were remove. Samples collected from the tank excavation detected traces of toluene, ethylbenzene, and xylene over three orders of magnitude below risk-based concentrations.	Tank system remove. Remaining risk <1E-04.
LOFT-09	LOFT Septic Tank and Drain Field	X	—	FFA/CO "No Action" site. Nothing but domestic sanitary waste had ever entered the septic system and there was no evidence of historical or threatened release.	No evidence of contamination.
LOFT-10	LOFT Sulfuric Acid Spill	X	—	OU 1-07B ROD "No Action" site. Two sulfuric acid spills occurred in 1983. Approximately 0.5 yd^3 of contaminated soil was excavated and disposed of at the time. A 1991 site investigation and soil testing revealed that no acid remained in the shallow soil.	Soil contamination removed; no evidence of contamination.
LOFT-11	LOFT Cryogen Pits (3) East of TAN-629	X	—	OU 1-07B ROD "No Action" site. The pits were intended for the disposal of liquid nitrogen, but the experiment was canceled in 1967 before the pits were ever used. No known or suspected hazardous or radioactive materials were disposed at LOFT-11.	No evidence of contamination.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
LOFT-12	LOFT North Transformer Yard PCB Spill and Soil Site	X	—	A removal action with a target cleanup level of 1.0 mg/kg was completed in 1994. Verification sampling indicated that the PCB-contaminated soil had been adequately remediated. Current residential risk of 1E-04, current occupational risk of 1E-07, and future residential risk of 1E-04.	Risk #1E-04.
LOFT-13	LOFT Dry Well	X	—	FFA/CO "No Action" site. In August 1991, the well was backfilled and the area was surveyed for VOCs and radioactivity.	No evidence of contamination.
LOFT-14	LOFT Asbestos Piping	X	—	OU 1-07B ROD "No Action" site. In July 1991, all the asbestos was removed from the pipe, packaged, and disposed of in the asbestos area at the CFA landfill. The metal pipe and the underlying soil were also disposed of at the CFA Landfill.	Asbestos contamination removed.
LOFT-15	LOFT Buried Asbestos Pit	X	—	OU 1-07B ROD "No Action" site. In March 1992 all of the asbestos-contaminated soil and most of the original burn layer was removed. Exploratory trenches and soil sampling failed to reveal any detectable asbestos at levels above 1%.	Asbestos contamination removed.
LOFT-16	LOFT Landfill Northeast of LOFT-02 Drainage Pond	X	—	Landfill operational from 1973 to 1980 and used for disposal of excess construction materials and equipment. No burning of waste is believed to have occurred. When the landfill reached capacity, earth-moving equipment backfilled the site, compacted the soil, and graded the area. Analytical results confirm that only very low levels of contamination from VOC s is present in the landfill and there is no appreciable source.	No evidence of source of contamination.
SMC-01	SMC Septic Tank and Drain Field	X	—	FFA/CO "No Action" site. The initial assessment indicated that no hazardous or radioactive materials are associated with the system.	No evidence of contamination.
TSF-01	TSF Diesel Tank West of TAN-607 and Fuel Spill	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in September 1991. Approximately 96 yd^3 of contaminated soil was removed from the site. Sampling detected ethylbenzene and xylene over three orders of magnitude below risk-based concentrations, and a qualitative risk evaluation indicated that the TPH does not pose an unacceptable risk.	Remaining risk <1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-02	TSF Service Station Spill	X	—	The soil from the TSF-02 spill area was removed when the INEL Road Program rebuilt and repaved the road in front of TAN-664 from 1986 to 1987 and when the service station was upgraded in 1991.	Soil contamination removed; no evidence of source of contamination.
TSF-03	TSF Burn Pit	—	X	TSF-03 has been backfilled, subsidence control maintained, and vegetation has been reestablished. No contaminants were detected that pose risks >E-04; however, lead was detected at concentrations greater than EPA's 400 mg/kg residential cleanup level. Native soil cover will be placed over TSF-03.	After remedial action, lead concentrations will still be greater than EPA residential cleanup level.
TSF-04	TSF Gravel Pit/Acid Pit	X	—	OU 1-07B ROD "No Action" site. One 55-gal drum of sulfuric acid was reportedly disposed sometime between 1958 and 1959. Sulfuric acid would have been quickly neutralized by the naturally alkaline soil. A 1990 field inspection revealed no evidence of stressed vegetation or surface stains at the site.	No evidence of contamination.
TSF-05	TSF Injection Well	—	X	Remedial Action from OU 1-07B ROD signed August 1995. Since 1988, elevated concentrations of trichloroethylene and other volatile organics have been detected as well as some radionuclides. Future residential risk is greater than 1E-04.	Ongoing treatment of groundwater. Remedial action will meet MCLs.
TSF-06	TSF TAN/TSF-01 Area (Soil Area)	N/A	N/A	See separate areas below.	See separate areas below.
	• Area 1	—	X	Current residential risk 1E-03, current occupational risk of 2E-04, and future residential risk of 2E-04.	Risk >1E-04.
	• Area 3	X	—	Current residential risk of 1E-04, current occupational risk of 1E-07, and future residential risk of 1E-04.	Risk #1E-04.
	• Area 5	—	X	Current residential risk of 3E-04, current occupational risk of 9E-05, and future residential risk of 1E-04.	Risk >1E-04.
	• Area 7	X	—	Current residential risk of 1E-04, current occupational risk of 3E-06, and future residential risk of 1E-04.	Risk #1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
	• Area 8	X	—	Current residential risk of 1E-04, current occupational risk of 9E-06, and the future residential risk of 1E-04.	Risk #1E-04.
	• Area 9	X	—	Current residential risk of 1E-04, current occupational risk of 5E-06, and the future residential risk of 1E-04.	Risk #1E-04.
	• Area 10	X	—	The OU 1-10 Comprehensive RI/FS identified no COPCs for TSF-06, Area 10.	Contaminated screening process determined there were no COPCs.
	• Area 11	—	X	Current residential risk of 3E-04, current occupational risk of 1E-04, and the future residential risk of 1E-04.	Risk >1E-04.
	• Area B	—	X	Current occupational and future residential risk >E-04. Remedial action will excavate and dispose contaminated soil.	Risk >1E-04. ICs will only be needed if contamination after excavation is present above FRGs.
TSF-07	TSF Disposal Pond	—	X	Current occupational risk of 1E-03 and future residential risk of 8E-04. Remedial action will be limited action, consisting of additional institutional controls and environmental monitoring.	Risk >1E-04. ICs are part of selected remedy.
TSF-08	TSF HTRE III Mercury Spill Sites 13B and 13C	—	X	Treatability studies will be conducted under WAG 10; remedial action by WAG 1 if required. Current residential risk is 1E-04, future occupational risk is 8E-07, and future residential risk is 1E-04. Site has a HI of 30 from mercury.	Mercury HI >1
TSF-09	TSF Intermediate-Level (Radioactive) Waste Disposal System	—	X	Current and future occupational risk, as well as future residential risk >E-04. Remedial action will excavate and dispose contaminated soil and treat and dispose tank contents.	Risk >1E-04. Only needed if contamination after excavation is present above FRGs.
TSF-10	Drainage Pond	—	X[c]	Radiation field surveys detected no evidence of contamination, and site visits showed no evidence of stressed vegetation. Metals and low-level radionuclide contamination may be present. Current residential risk of 2E-04, current occupational risk of 3E-05, and future residential risk of 1E-04.	Risk >1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-11	TSF Three Clarifier Pits East of TAN-604	X	—	The clarifier pits were removed in May 1994. Current residential risk 1E-04, current occupational risk 1E-07, and future residential risk of 1E-04.	Risk #1E-04.
TSF-12	TSF Acid Neutralization Sump North of TAN-602	X	—	The tanks operated for less than 3 years, and are not known to have leaked during that period. Preliminary scoping information showed that one tank is filled with sand and covered by a building and the other has been removed.	No evidence of contamination.
TSF-13	TSF Gasoline Tank North of TAN-610	X	—	OU 1-07B ROD "No Action" site. The tank and its contents were removed about 1980. No releases were recorded and none are known to have occurred. Photo ionization detector (PID) detected no organic vapors in site soil.	Tank system removed; no evidence of contamination.
TSF-14	TSF Fuel Oil Tank Northwest of TAN-603	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in 1991. Diesel-contaminated soil was present below the fill pipe. Benzene, toluene, ethylbenzene, and xylene were detected in soil samples from the excavation more than two orders of magnitude below risk-based concentrations.	Tank system removed. Remaining risk <1E-04.
TSF-15	TSF Fuel Tank West of TAN-603	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in August 1990. TPH detected in excavation; risk analysis showed that TPH concentrations would not pose an unacceptable risk via the soil ingestion pathway.	Tank system removed. Remaining risk <1E-04.
TSF-16	TSF Brine Pit North of TAN-608	X	—	FFA/CO "No Action" site. Findings from the summary assessment indicate that waste is nonhazardous and there is no known evidence of any historical or threatened releases.	No evidence of contamination.
TSF-17	TSF Two Acid Neutralization Pits North of TAN-649	X	—	TSF-17 consists of one tank with two chambers formerly used to treat acidic effluent from a demineralization process. The tank was removed in August 1993. Data taken during the removal action includes the tank did not leak.	Tank system removed; no evidence of contamination.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-18	Contaminated Tank Southeast of Tank V-3	—	X	Current and future occupational risk, as well as future residential risk >E-04. Remedial action will excavate and dispose contaminated soil and treat and dispose tank contents.	Risk >1E-04. Only needed if contamination after excavation is present above FRGs.
TSF-19	TSF Caustics Tank V-4 South of TAN-616	X	—	Historical information indicated that the tank never leaked. Site investigations and field surveys have shown that the tank is empty and that no internal contamination is present. The tank is presently not used, and is buried 3 m (10 ft) deep and partially beneath a building.	No evidence of contamination.
TSF-20	TSF Two Neutralization Pits North of TAN-607	X	—	The tank, its contents, and surrounding soil were removed in October 1993. Soil samples indicated metals and Cs-137 are below risk-based concentrations or background levels.	Tank removed; no evidence of source of contamination. Remaining risk <1E-04.
TSF-21	TSF IET Valve Pit	X	—	The valve pit was removed in November 1993. Residual radionuclide and volatile organic contamination may exist. Current residential risk of 1E-04, current occupational risk of 1E-07, and future residential risk of 1E-04.	Risk #1E-04.
TSF-22	TSF Railroad Turntable	X	—	In the 1980s, the wooden planking on the turntable was replaced. A number of "hot spots" were detected on the original planking and were removed and disposed of a low-level radioactive waste at RWMC. Soil samples collected in 1993 indicate that no contaminants are present above risk-based concentrations. Current residential risk of 1E-04, current occupational risk of 4E-05, and future residential risk of 1E-04.	Risk #1E-04.
TSF-23	Contaminated Groundwater Beneath TSF	—	X	Remedial Action from OU 1-07B ROD signed August 1995. Since 1988, elevated concentrations of trichloroethylene and other volatile organics have been detected as well as some radionuclides. Future residential risk is greater than 1E-04.	Ongoing treatment of groundwater. Remedial action will meet MCLs.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-24	TSF Fuel Oil Tank Under Southwest Corner of TAN-607	X	—	OU 1-07B ROD "No Action" site. The tank, associated piping, and some soil with detectable contamination were removed in September 1990. Soil sample analysis indicated no further organic contamination.	Tank system and contaminated soil removed; no evidence of contamination.
TSF-25	TSF Oil Sumps East of TAN-609	X	—	OU 1-07B ROD "No Action" site. The sump was abandoned in 1987 and the floor drain to the sump was filled with concrete. Sample analysis from August 1993 confirm benzene concentrations three orders of magnitude below risk-based levels.	Risk <1E-04.
TSF-26	TSF PM-2A Tanks	—	X	Current and future occupational risk, as well as future residential risk >1E-04. Remedial action will excavate and dispose contaminated soil and treat and dispose tank contents.	Risk >1E-04. Only needed if contamination after excavation is present above FRGs.
TSF-27	TSF Paint Shop Drain	X	—	Only beryllium was found above risk-based concentrations, however, beryllium is naturally occurring and concentrations were less than twice the background concentration.	No evidence of source of contamination.
TSF-28	TSF Sewage Treatment Plant and Sludge Drying Beds	—	X[c]	The sewage treatment plant received small quantities of paint thinner and radioactive contamination. Detected levels of Co-60 and Cs-137 were determined to pose an acceptable risk. The Track 2 Decision Statement determined the site needed further evaluation; however, a verbal agreement between the Agencies during the preparation of the RI/FS classified the site as "No Further Action" in the RI/FS and Proposed Plans. Further sample data are needed to document this determination and to perform a risk assessment to quantify the site risk.	Will require institutional control until further risk assessment determines risk if #1E-04.
TSF-29	TSF Acid Pond	—	X[c]	Site investigations, field surveys, and soil data indicate random, isolated radioactive particles in the backfilled soil. Current residential risk of 3E-04, current occupational risk of 1E-04, and future residential risk of 1E-04.	Risk >1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-30	TSF Septic Tank East of TAN-602	X	—	FFA/CO "No Action" site. The system was used for the treatment of sanitary waste. There is no evidence of hazardous waste disposal.	No evidence of contamination.
TSF-31	TSF Acid Pit West of TNA-647	X	—	Radiation field surveys have not detected any evidence of contamination, and site visits have not shown any evidence of stressed vegetation or stained soil. A review of aerial photographs from the 1960s through the 1990s reveals no evidence of disposal activities at the site.	No evidence of contamination.
TSF-32	TSF Oil Tank South of TAN-601	X	—	OU 1-07B ROD "No Action" site. The tank and associated piping are believed to have been removed sometime between the late 1950s and 1967. An asphalt road and parking lit currently cover the site. Geophysical surveys performed in 1990 and 1991 did not locate the tank. No known releases have occurred.	No evidence of contamination.
TSF-33	TSF T-11 Fuel Tank East of TAN-602	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in August 1990. Soil sample analysis detected no organic contamination.	Tank system removed; no evidence of contamination.
TSF-34	Fuel Tank South of TAN-607	X	—	A 1991 search for the tank using subsurface radar and a metal detector provided no evidence that the tank was still in place. No evidence of any releases of hazardous substances, pollutants, or contaminants.	No evidence of contamination.
TSF-35	Acid Sump Southeast of TAN-609	X	—	Interviews indicate that no acid was ever discharged to the sump. Anecdotal information indicated that the only wastewater to enter the sump was water from botanical experiments and snowmelt from vehicles brought into TAN-609 for maintenance activities.	No evidence of contamination.
TSF-36	TSF TAN-603 French Drain	X	—	Records indicate the drain was last used in 1980. All available drawings and documentation indicate the French Drain was designed and used for handling steam condensate from the boilers only. The drain was removed in the spring of 1995. Current residential risk of 1E-04, current occupational risk of 1E-07, and future residential risk of 1E-04.	Risk #1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-37	TSF Contaminated Well Water Spill	X	—	Site of an 83,160-L (22,000-gal) spill in 1988 from an aboveground tank that stored water from purging and sampling of TSF-05. Current residential risk of 1E-04, current occupational risk of 1E-07, and future risk of 1E-04.	Risk #1E-04.
TSF-38	TSF Bottle Site	X	—	The surface contamination was remediated as part of a cleanup effort by DOE in March 1992. In March 1994, a time-critical CERCLA removal action was initiated to remove any hazardous waste, debris, and contaminated soil present at TSF-38. The OU 1-10 Comprehensive RI/FS identified no COPCs for TSF-38.	Contaminated screening process determined there were no COPCs.
TSF-39	TSF Transite (Asbestos) Contamination	—	X[d]	OU 1-07B ROD "No Action" site. The area contains small pieces of asbestos cement. Inspections have determined that the asbestos is tightly encapsulated in cement and is not likely to be released. However, friable asbestos may be released if pulverized or crushed.	Asbestos contamination is present.
TSF-40	Rubble Pile Near TAN	X	—	Concrete rubble and other types of construction material were disposed of at this time. An asbestos cleanup was performed in 1989 and there is no evidence of any historical or threatened releases of hazardous substances, pollutants, or contaminants.	No evidence of contamination.
TSF-41	Scrap Yard South	X	—	Scrap dealers removed batteries and an asbestos cleanup was performed in 1989. There is no evidence that any historical or threatened releases of hazardous substance, pollutants, or contaminants from TSF-41 present a danger to public health or the environment.	No evidence of contamination.
TSF-42	TAN-607-A Room 161 Contaminated Pipe	—	X[c]	The pipe is internally contaminated with radioactive material, surrounded by concrete, and located under the floor of Room 161 in TAN-607-A. The contamination is fixed and no environmental releases have occurred.	Institutional Control until building D&D. Risk is unknown.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
TSF-43	RPSSA Buildings 647/648 and Pads	—	X[c]	The TAN-647 building is an interim status storage unit for certain hazardous wastes under the INEEL RCRA Interim Status Program. Any contamination that creates a future risk will be removed during the closure of the site as an Interim Status facility.	Institutional Control until closure of the site as an Interim Status facility.
TSF-44	TSF Diesel Fuel Pipeline Leak Northwest of TAN-604	X	—	TSF-44 is the location of diesel fuel releases caused by leaks in the line running from the main storage tank to the boilers. After each release the contaminated soil was removed and disposed at the TAN borrow pit. A 1994 environmental survey detected no organic vapors and no physical evidence of fuel leakage. Sampling results indicated a detectable VOCs.	No evidence of contamination.
TSF-45	AEC Burial Pit	X	—	The pit was used for construction waste disposal during and after renovations of the LOFT facility. No hazardous or radioactive materials were disposed at TSF-45 according to personnel interviews and work records.	No evidence of contamination.
WRRTF-01	WRRTF Burn Pits I, II, III, and IV	—	X	The burn pits have been backfilled and vegetation reestablished. Current and future total residential risk of 1E-04. Lead was detected at concentrations greater than EPA's 400 mg/kg residential cleanup level. Native soil cover will be placed over WRRTF-01.	After remedial action, lead concentrations will still be greater than EPA residential cleanup level.
WRRTF-02	WRRTF Two-Phase Pond	X	—	OU-1-07B ROD "No Action" site. The effluent to the pond consists of primarily steam condensate and process wastewater. Site inspections revealed no evidence of contamination, stained soil, or stressed vegetation.	No evidence of contamination.
WRRTF-03	WRRTF Evaporation Pond	X	—	OU-1-07B ROD "No Action" site. Records indicate that only low concentrations of inorganic contaminants were discharged to the pond. Site inspections revealed no evidence of contamination, stained soil, or stressed vegetation. No source of contamination exists at the pond.	No evidence of contamination.
WRRTF-04	WRRTF Radioactive Liquid Waste Tank	X	—	The tank and associated piping were removed in August 1993. No holes or leaks were detected. No known release. OU 1-10 BRA contaminant screening process identified no COPCs.	Contaminant screening process determined there were no COPCs.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
WRRTF-05	WRRTF Injection Well	X	—	Two one-tine releases of approximately 50 mCi Co-60 in 1969 and 212 L (56 gal) of turbine oil have been documented as released to the well. Samples collected after the May 1995 RI/FS scoping meetings detected no contaminant concentrations above drinking water standards. There is no indication of a continuing source of contamination.	No evidence of source of contamination.
WRRTF-06	WRRTF Sewage Lagoon	X	—	OU 1-07B ROD "No Action" site. Unlined surface impoundment that received nonhazardous sanitary and process waste from 1984 to the present. Site inspections revealed no evidence of contamination, stained soil, or stressed vegetation. No Known hazardous or radioactive discharges to the pond.	No evidence of contamination.
WRRTF-07	WRRTF Septic Tank and Sand Filters	X	—	FFA/CO "No Action" site. The only known waste discharged to the system was from building toilets and wash sinks; no hazardous or radioactive materials are associated with the system.	No evidence of contamination.
WRRTF-09	WRRTF Diesel Fuel Tank	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in August 1990. Soil sample analysis detected TPH below 1,000 mg/kg action level (maximum concentration was 110 mg/kg TPH),	Tank system removed. Remaining contamination below action levels.
WRRTF-10	WRRTF Gasoline Tank	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, and the associated piping were removed in August 1990. Contaminated soil removed from excavation. Soil sample analysis detected no organic contamination.	Tank system removed; no evidence of source of contamination.
WRRTF-12	WRRTF Diesel Fuel Tank	X	—	OU 1-07B ROD "No Action" site. The tank, its contents, associated piping, and contaminated soil around the tank were removed in August 1990. Soil sample results detected traces of toluene, ethylbenzene, and xylene over three orders of magnitude below risk-based concentrations.	Tank system and soil contamination removed. Remaining risk of <1E-04.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
WRRTF-13	WRRTF Fuel Leak	—	X	Calculation of numeric health risk values for fuel is not possible. State of Idaho residential guidelines were used to determine need for cleanup. Remedial action to consist of excavation & land farming.	Fuel contamination is present. ICs will only be needed if contamination after excavation exceeds FRGs.
None	IET Pond and Ditch West of IET	X	—	Construction of the ditch and pit is evident in a 1954 photograph. A site survey performed in March 1994, which included monitoring for VOCs, mercury, and radiation, found no evidence of contamination.	No evidence of contamination.
None	IET Gravel Pit	X	—	Review of a 1976 photograph indicates a quarry site northeast of IET. A site survey was performed in March of 1994, which included VOC, mercury, and radiation monitoring. No evidence of contamination was observed.	No evidence of contamination.
None	IET Burn Pit East of IET	X	—	A 1954 photograph indicates a burn pit west of the facility. A site survey was performed in March of 1994, which included monitoring for VOCs, mercury, and radiation. No evidence of contamination was observed.	No evidence of contamination.
None	LOFT Burn Pit Northwest of LOFT	X	—	Photographs from 1972 and 1973 indicate a burn pit located northwest of the LOFT Hangar Building. A site survey was performed in March of 1994, which included monitoring for VOCs, mercury, and radiation. No evidence of contamination was observed.	No evidence of contamination.
None	TSF Burn Pit II Southwest of the TSF-05 Injection Well	X	—	Photographs from 1957 indicate a burn pit located south of TSF-10 pond. The burn pit was active until 1959. A site survey was performed in March of 1994, which included monitoring for VOCs, mercury, and radiation. No evidence of contamination was observed.	No evidence of contamination.
None	TSF Radioactive Spills on Bear Blvd. West of TAN-607	X	—	There are reports of spills of radioactive liquids along Bear Blvd. A site survey was performed in March of 1994, which included monitoring for VOCs, mercury, and radiation. No evidence of contamination was observed.	No evidence of contamination.

Table 12-1. (continued).

Site Code	Site Name	"No Action" Sites[a]	Sites Requiring Institutional Controls[b]	Site Status	Basis for Recommendation
None	Radioactive Spill 1 mi South of TAN on Lincoln Blvd.	X	—	A uranium contaminated water spill occurred south of WRRTF along Lincoln Blvd.; however, a site survey in March 1994 did not reveal field radiation measurements above background for the area.	No evidence of contamination.
None	Sand Piles South of TSF and Southwest of WRRTF	X	—	Piles of sand containing a rust-like material were identified, sampled, and analyzed for toxicity characteristic leaching procedure constituents in August 1993. No evidence of contamination was found.	No evidence of contamination.
None	WRRTF Transite Area	X	—	This is a reported construction debris area containing small pieces of transite cement. Site visits and field screening detected no evidence of hazardous waste, hazardous substances or hazardous constituents at the site.	No evidence of contamination.
None	Broken Pipe in Berm East in TAN-633	X	—	This proposed site is a broken pipe located in the berm east of TAN-633. Previous disposal of liquids down the pipe leading to Tanks TSF-17 and TSF-21 was confirmed through employee interview. The lines have been cleaned out. There is no residual contamination suspected in the system.	No evidence of contamination.
None	Buried Asbestos Behind the Hanger at SMC	X	—	Buried asbestos insulation was encountered while digging a trench in 1989. The occurrence was previously reported and designated as LOFT-16.	Designated as LOFT-16.

a. Unrestricted land use can be allowed for "No Action" sites, and 5-year reviews are not required.

b. Unless specified otherwise, land use will be restricted at each institutional control site until 2099, or until the site is released for unrestricted land use through a 5-year review.

c. The identification of the site as a "No Action" site was revised from the classification presented in the OU 1-10 Proposed Plan in accordance with EPA Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities (EPA 1999).

d. Site classification as a "No Action" site in the OU 1-17B ROD has been changed in accordance with EPA Region 10 Final Policy on the Use of Institutional Controls at Federal Facilities (EPA 1999).

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Sites TSF-06 Area B, TSF-09/18, TSF-26 S Radionuclide-contaminated soil will be removed by excavation. Current occupational risks are greater than 1E-04. Remedial action is expected to remove all contaminated soils above risk-based levels. Long-term institutional controls will only be required if contamination is left in place that exceeds 1E-04 risk. Institutional controls, if required, will be implemented until risk is #1F-04 as documented in a 5-year review.					
Current DOE operations until final action implemented	Industrial – Radiologically Controlled Area	Radionuclides – external radiation	Limited direct exposure to radiologically contaminated soil.	1. Visible access restriction 2. Control of activities	FFA/CO (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and ALARA principles (DOE Order 5400.5) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA (42 USC 9620 § 120(h))
DOE control post operations	Industrial – Radiologically Controlled Area	Radionuclides – external radiation	Ensure land use is appropriate if contamination is left in place	Property lease requirements including control of land use, if necessary	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(55))[b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Radionuclides – external radiation	Ensure land use is appropriate if contamination is left in place	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use, if necessary	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(3))[d] CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e] CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f] CERCLA (42 USC 9620 § 120(h)(1)-(3))[g] CERCLA (42 USC 9620 § 120(h)(4))[h] Property relinquishment notification (43 CFR 2372.1)[i] Criterion for U.S. Bureau of Land Management acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Sites TSF-03, WRRTF-01 – Lead contamination will be left in place above EPA's residential guidelines. Current occupational risks cannot be calculated for lead, however, best management practices will prevent current occupational worker contact with contaminated soil. Native soil cover will be placed over contaminated area to provide a standoff cover to prevent access to the underlying contaminated soil. Institutional controls will be used indefinitely, unless the site is released based upon documentation in a 5-year review.					
Current DOE operations until final action implemented	Industrial	Lead	Limited exposure to contaminated soil.	1. Visible access restriction	FFA/CO (DOE-ID 1991)
			Maintain integrity of native cover and/or engineered cover	2. Control of activities	
DOE control post operations	Industrial	Lead	Maintain integrity of native cover and/or engineered cover	1. Visible access restrictions	FFA/CO (DOE-ID 1991)
				2. Control of activities	CERCLA (42 USC 9620 § 120(h)(55))[b]
				Property lease requirements including control of land use	Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c]
					Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Lead	Maintain integrity of native cover and/or engineered cover	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use	FFA/CO (DOE-ID 1991)
					CERCLA (42 USC 9620 § 120(h)(3))[d]
					CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e]
					CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f]
					CERCLA (42 USC 9620 § 120(h)(1)-(3))[g]
					CERCLA (42 USC 9620 § 120(h)(4))[h]
					Property relinquishment notification (43 CFR 2372.1)[i]
					Criterion for BLM acceptance of property (43 CFR 2374.2)[j]
					Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k]
					Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Site WRRTF-13 – Fuel-contaminated soil will be removed by excavation. Current occupational risks cannot be calculated for TPH, however, best management practices will prevent current occupational worker contact with contaminated soil. Remedial action is expected to remove all contaminated soils above FRGs, which will be determined using the State of Idaho RBCA guidance. Long-term institutional controls will only be required if contamination is left in place that exceeds the FRGs. Institutional controls, if required, will be implemented until the remaining risk meets acceptable State of Idaho RBCA guidance levels, as documented in a 5-year review.					
Current DOE operations until final action implemented	Industrial	Fuel	Limited exposure to contaminated soil	1. Visible access restriction 2. Control of activities	FFA/CO (DOE-ID 1991)
DOE control post operations	Industrial	Fuel	Ensure land use is appropriate if contamination is left in place	Property lease requirements including control of land use, if necessary	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(55))[b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Fuel	Ensure land use is appropriate if contamination is left in place	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use, if necessary	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(3))[d] CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e] CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f] CERCLA (42 USC 9620 § 120(h)(1)-(3))[g] CERCLA (42 USC 9620 § 120(h)(4))[h] Property relinquishment notification (43 CFR 2372.1)[i] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Site TSF-07 – Selected remedial action remedy is Limited Action, of which institutional controls is a primary component. Institutional controls will be maintained until 2099 or until risk is #1E-04 as documented in a 5-year review.					
Current DOE operations	Industrial–Radiologically Controlled Area	Radionuclides – external radiation	Limited direct exposure to radiologically contaminated soil	1. Visible access restriction 2. Control of activities	FFA/CO (DOE-ID 1991) Worker protection (10 CFR 835) Radiation protection of the public and ALARA principles (DOE Order 5400.5) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA (42 USC 9620 § 120(h))
DOE control post operations	Industrial–Radiologically Controlled Area	Radionuclides – external radiation	Limited direct exposure to radiologically contaminated soil	1. Visible access restrictions 2. Control of activities Property lease requirements including control of land use	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(55))[b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Radionuclides – external radiation	Limited direct exposure to radiologically contaminated soil	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use	FFA/CO (DOE_ID 1991) CERCLA (42 USC 9620 § 120(h)(3))[d] CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e] CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f] CERCLA (42 USC 9620 § 120(h)(1)-(3))[g] CERCLA (42 USC 9620 § 120(h)(4))[h] Property relinquishment notification (43 CFR 2372.1)[i] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Site IET-04, TSF-06 Area 1, TSF-06 Area 5, TSF-06 Area 11, TSF-08, TSF-10, TSF-28, TSF-29, TSF-39, TSF-42, TSF-43 – Risk at these sites is either not completely characterized, calculated risk of known remaining contamination does not allow unrestricted land use (the current residential risk is >1E-04 or HI greater than 1), or requires institutional controls until site is further dispositioned (see Table 12-1 for site status). Institutional controls will be provided until 2099 or until the risk is #1E-04 as documented in a 5-year review.					
DOE Control	Industrial	Radionuclides Mercury Asbestos (varies by site)	Limited exposure to contaminated soil Ensure land use is appropriate	1. Visible access restriction 2. Control of activities Property lease requirements including control of land use, if necessary	FFA/CO (DOE-ID 1991) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA (42 USC 9620 § 120(h)) CERCLA (42 USC 9620 § 120(h)(5))[b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Radionuclides Mercury Asbestos (varies by site)	Ensure land use is appropriate	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use, if necessary	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(3))[d] CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e] CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f] CERCLA (42 USC 9620 § 120(h)(1)-(3))[g] CERCLA (42 USC 9620 § 120(h)(4))[h] Property relinquishment notification (43 CFR 2372.1)[i] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority
Site TSF-05 and TSF-23 – These sites are under the OU 1-07B ROD, signed August 1995. This ROD (OU 1-10) provides institutional control requirements for the sites. Groundwater contamination exceeds MCLs or risk-based levels, as documented in the OU 1-07B ROD. The selected remedial action, currently underway, is expected to achieve cleanup by 2095. Institutional controls will be provided until 2095 or until the risk from these sites reach acceptable levels (as identified in the OU 1-07B ROD) or contaminant concentrations are below MCLs, as documented in a 5-year review.					
DOE Control	Industrial	Radionuclides–ingestion Organics–ingestion	Prevent consumption and use of groundwater >MCL and/or 1E-04 risk	1. Visible access restriction 2. Control of activities 3. Prevent well drilling Property lease requirements including control of land use, if required based on results of remedial action	FFA/CO (DOE-ID 1991) National Oil and Hazardous Substances Pollution Control Plan (40 CFR Part 300) CERCLA (42 USC 9620 § 120(h)) CERCLA (42 USC 9620 § 120(h)(5))[b] Hall Amendment of the National Defense Authorization Act (Public Law 103-160)[c] Property release restrictions (DOE Order 5400.5)
Post-DOE control	Industrial	Radionuclides–ingestion Organics–ingestion	Prevent consumption and use of groundwater >MCL and/or 1E-04 risk	Property transfer requirements including issuance of a finding of suitability to transfer and control of land use, if required based on results of remedial action	FFA/CO (DOE-ID 1991) CERCLA (42 USC 9620 § 120(h)(3))[d] CERCLA (42 USC 9620 § 120(h)(3)(C)(ii))[e] CERCLA (42 USC 9620 § 120(h)(3)(A)(iii)[f] CERCLA (42 USC 9620 § 120(h)(1)-(3))[g] CERCLA (42 USC 9620 § 120(h)(4))[h] Property relinquishment notification (43 CFR 2372.1)[i] Criterion for BLM acceptance of property (43 CFR 2374.2)[j] Excess property reporting requirements (41 CFR 101-47.202-1,-2,-7)[k] Property release restrictions (DOE Order 5400.5)

Table 12-2. (continued).

Timeframe	Land Restriction[a]	Exposure concern	Objective	Controls	Regulatory Basis or Authority

a. Institutional controls are applicable to sites where hazardous substances, pollutants, or contaminants are present that preclude unlimited land use. Surveillance will be conducted every 5 years to ensure that controls are in place.

b. Notification to sates of leases involving contamination.

c. Request concurrence of U.S. Environmental Protection Agency on leases of National Priorities List (54 FR 48184) sites.

d. A statement that remedial action is complete is required in the deed.

e. If response action for which the federal government is responsible is not complete, restrictions, the response guarantee, schedule for investigation and completion of all necessary response actions, and budget assurances must be included in the deed.

f. A clause allowing the U.S. Government access to the property must be included in the deed.

g. A notice of information about hazardous substances present on the property must be included in the deed.

h. Uncontaminated parcels of land must be identified and concurred with by the EPA administrator before termination of operations.

i. A notice of Intent with contamination information and protection needs is required to relinquish the property to the U.S. Department of Interior.

j. Transfer to the U.S. Department of Interior must indicate continuation of DOE responsibility.

k. Report on excess real property to the General Services Administration on contamination information and allowable land use.

Table 12-3. Cost estimate summary for Waste Area Group 1 "No Further Action" institutional control sites.

		$ Fiscal Year (FY)-99
FFA/CO Management and Oversight		
	WAG 1 – Management	70,926
Remediation Oversight		
	Construction Oversight	N/A
	Construction Project Management	20,807
	Remedial Action Document Preparation	N/A
	Remedial Action Report	N/A
	WAG-Wide Remedial Action 5-Year Review	N/A
Remedial Design		
	Added Institutional Controls - Land Restrictions	32,000
	Title Design Construction Document Package	58,300
Construction Subcontract	Site Characterization	17,150
	Implementing Institutional Controls (i.e., fence, signs)	94,323
CAPITAL COST SUBTOTAL		293,506
	Contingency @ 30%	88,052
TOTAL CAPITAL COST IN FY-99 DOLLARS		381,558
TOTAL CAPITAL COST IN NET PRESENT VALUE		350,769
Operations		
	WAG 1 – Management	564,474
	WAG 1 RA 5-Year Reviews	180,000
	Site Maintenance	453,000
D&D		
Surveillance and Monitoring		
OPERATION AND MAINTENANCE (O&M) COST SUBTOTAL		1,197,474
	Contingency @ 30%	359,242
TOTAL O&M COST IN FY-99 DOLLARS		1,556,717
TOTAL O&M COST IN NET PRESENT VALUE		593,685
TOTAL PROJECT COST IN NET PRESENT VALUE		944,454

Within 6 months of the signature of this ROD, a report about monitoring the effectiveness of WAG 1 institutional controls will be submitted to EPA and IDHW. An updated institutional control monitoring report will be submitted to EPA and IDHW every 5 years to support the 5-year review. The deadline for the initial and subsequent monitoring reports may be modified, subject to approval by EPA and IDHW, to accommodate the submittal of one monitoring report for all operable units and all institutional controls at WAG 1, and possibly one or more monitoring reports for all INEEL waste area groups, to thereby allow integration of different decision document signature dates. In addition, after the INEEL comprehensive approach is well established and its effectiveness has been demonstrated, the frequency of future monitoring reports may be modified, subject to approval by EPA and IDHW. At a minimum, the institutional controls monitoring report will contain the following components:

- A description of the means employed to meet WAG 1 institutional control requirements
- A description of the means employed to meet site-specific objectives, including the results of visual field inspection of all areas subject to waste site-specific restrictions
- An evaluation of the effectiveness of the approach at meeting all WAG-wide institutional control requirements and waste site-specific objectives
- A description of any deficiencies of the approach and the efforts or measures that have been or will be taken to correct problems.

The EPA and IDHW review of the institutional controls monitoring report will be complete within 30 days of submittal and follow existing procedures for agency review of secondary documents.

The DOE will notify EPA and IDHW upon the discovery of any activity that is inconsistent with institutional control objectives or of any change in the land use or land-use designation of a site addressed in the WAG 1 list of areas or locations covered by institutional controls. The DOE will work together with EPA and IDHW to determine a plan of action to rectify the situation, except when DOE believes that an activity creates an emergency situation. The DOE can respond to the emergency immediately upon notification to EPA and IDHW and need not wait for EPA or IDHW input to determine a plan of action. The DOE will identify the problems with the institutional control process, determine the changes necessary to correct the process to avoid future problems, and implement these changes after consulting with EPA and IDHW.

The DOE will identify a point of contact for implementing, maintaining, and monitoring institutional controls.

The DOE will notify EPA and IDHW at least 6 months before the transfer, sale, or lease of any property subject to institutional controls required by a decision document. Such notification will allow the involvement of EPA and IDHW in discussions to ensure that appropriate provisions are included in the conveyance documents to maintain effective institutional controls. If it is not possible for DOE to notify EPA and IDHW at least 6 months before the transfer, sale, or lease of any property subject to institutional controls, then DOE will notify EPA and IDHW as soon as possible thereafter.

The DOE will not delete or terminate any institutional control unless EPA and IDHW have concurred in the deletion or termination.

12.2 Disposition of Investigation Derived Waste

Previous CERCLA investigations and activities have generated approximately 11.33 m^3 (400 ft^3) of IDW at TAN. The IDW has been characterized as polychlorinated biphenyl (PCB)/radioactive mixed (F001-listed) wastes and are both combustible and noncombustible materials such as sample containers, personnel protective clothing, rags, plastic sheeting, etc. This waste was inadvertently commingled and subsequently boxed with PCB-free, combustible, low-level waste generated from other TAN CERCLA investigations. This has resulted in approximately 577.4 m^3 (20,392 ft^3) of IDW currently being stored in two CERCLA Waste Storage Units (CWSUs), TAN-616-000-B, located near the TSF-09 site, and TAN-624-000-A, located at LOFT. This waste will be dispositioned appropriately. Combustible material is planned to be treated at the Waste Experimental Reduction Facility (WERF) in the Year 2001.

Contaminated media generated during RD/RA activities or potential new sites will be dispositioned in accordance with regulatory requirements to achieve remediation goals consistent with remedies selected for the sites in this ROD. Costs for dispositioning this waste is not included in the cost estimate given in Table 12-4.

Table 12-4. Cost estimate summary for investigation-derived waste.

		$ Fiscal Year (FY)-99
FFA/CO Management and Oversight		
	WAG 1 – Management	210,000
Waste to WERF (90% non-PCB waste)		
	Load/Transport Waste to WERF	25,924
	WERF Incineration (No Charge – Program Funded)	N/A
Off-Site Treatment (10% PCB waste)		
	Prepare and Approve Segregation Procedure	13,686
	Segregate Waste and Repackage PCB Waste	42,329
	Ship Repackaged PCB Waste to Storage	1,500
	Weekly Inspections of Stored Waste	73,833
	Load/Prepare Waste for Off-Site Transport	70,000
	Transportation to Off-Site Treatment	11,700
	Treatment of PCB Waste	385,182
	Transport Treated Waste back to INEEL	3,900
	Dispose of Treated Waste at INEEL Repository	3,142
Subcontract for Services		
	Subcontractor Overhead and Profit	189,359
	Procurement Fees and G&A	295,400
CAPITAL COST SUBTOTAL		1,325,955
	Contingency @ 30%	397,786
TOTAL CAPITAL COST IN FY-99 DOLLARS		1,723,741
TOTAL CAPITAL COST IN NET PRESENT VALUE		1,583,937
Operations		
	WAG 1 – Management	N/A
	Annual Operations and Maintenance Reports	N/A
Decontamination and Dismantlement		N/A
Surveillance and Monitoring		N/A
OPERATION AND MAINTENANCE (O&M) COST SUBTOTAL		N/A
	Contingency @ 30%	N/A
TOTAL O&M COST IN FY-99 DOLLARS		N/A
TOTAL O&M COST IN NET PRESENT VALUE		N/A
TOTAL PROJECT COST IN NET PRESENT VALUE		1,583,937

13. STATUTORY DETERMINATION

The selected remedy for each of the sites requiring remedial action has been determined to be protective of human health and the environment, to comply with federal and state requirements that are legally applicable or relevant and appropriate (ARAR to the remedial actions), and to be cost effective.

Exposure levels will be reduced to risks less than or equal to 1E-04 for carcinogens and hazard indices less than one or noncarcinogens by the selected remedies. Implementation of the selected remedies will not pose unacceptable short-term risks or cross-media impacts.

These remedies use permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because treatment of radionuclide-contaminated soil is not found to be practical for the radionuclide-contaminated soil sites, these remedies do not satisfy the statutory preference for treatment as a principal element of the remedy. The EPA's preference for sites that pose relatively low level threats or where treatment is impractical is engineering controls, such as containment. State and community acceptance were factored into the decision making.

For those sites where contaminants are to be left in place (e.g., Containment and Limited Action) in excess of health-based levels, a review will be conducted no less than every 5 years after the first remedial action is initiated (statutory 5-year review) to ensure that the remedy is still effective in protecting human health and the environment and to assess the need for future long-term environmental monitoring and institutional controls. These comprehensive statutory 5-year reviews will be conducted to evaluate factors such as contaminant migration from sites where contamination has been left in place, effectiveness of institutional controls, and overall effectiveness of the remedial actions. For the Limited Action remedy, it is assumed that the institutional controls will remain in place for at least 100 years.

The Agencies concur that "No Action" be taken at 76 sites, Institutional controls may be required at the remaining 18 sites. Those sites for which "No Further Action" is taken, based on the residential land-use assumptions, will be reviewed as part of the 5-year review, in addition to the remedial action sites.

14. REFERENCES

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PART III
RESPONSIVENESS SUMMARY

1. INTRODUCTION

This Responsiveness Summary is Part III of the Record of Decision (ROD) for Operable Unit 1-10 of Waste Area Group (WAG) 1, Test Area North (TAN), at the Idaho National Engineering and Environmental Laboratory (INEEL). This document was prepared by the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Idaho Department of Health and Welfare, Division of Environmental Quality (the Agencies). Requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as well as the requirements of the Federal Facility Agreement and Consent Order (FFA/CO) were followed in preparation of this Responsiveness Summary. The decision made by the Agencies for this Operable Unit is based on information contained in the Administrative Record.

This Responsiveness Summary identifies and responds to more than 250 statements of preferences and concerns, comments, and questions received in more than 60 pages of written comments from at least 20 individuals and interested groups, and as formal statements at three public meetings, held on February 23, 24, and 26, 1998. All comments on both the February 1998 Proposed Plan and the November 1998 revised Proposed Plan were considered in preparation of the ROD and this Responsiveness Summary. All comments are included verbatim in the Administrative Record for WAG 1. The comments cover a wide range of issues, including:

1. Questions about the general goals of the CERCLA program

2. Evaluations of the effectiveness of the Proposed Plans and other community relations activities

3. Requests for more detail on aspects, procedures, and results of the comprehensive remedial investigation and feasibility study (RI/FS)

4. Concerns, disagreements, and requests for information about the content and history of sites identified for remediation, the details of remedial alternatives considered, the evaluation of the alternatives, and the rationale for the preferred alternatives

5. Statements supporting INEEL's cleanup program in general and approving of the remedial actions planned.

Written comments received and formal statements made at the public meetings showed that community acceptance of the preferred alternatives, as presented in the revised Proposed Plan, ranges from support, to support with reservations, to opposition and support for other alternatives. It can be seen from the following Responsiveness Summary that:

- The preferred alternative for the V-Tanks (Sites TSF-09 and TSF-18), in situ vitrification (ISV), drew many questions about its effectiveness, verifiability, safety, and compliance with applicable or relevant and appropriate requirements (ARARs). Although the results of the 1998 planar ISV treatability study provided answers to these concerns, new information on the cost of ISV for the V-Tanks severely decreased its cost-effectiveness. At the same time, Alternative 2 – Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal – became more implementable

due to the availability of facilities now permitted to treat the type of mixed waste found in the V-Tanks. This new information prompted a reevaluation of V-Tanks alternatives, and a change to Alternative 2 as the selected remedy.

- The preferred alternative for the PM-2A Tanks (Site TSF-26) was generally supported, with concerns expressed about its compliance with ARARs and verifiability.

- The preferred alternative for the Soil Contamination Area South of the Turntable (Site TSF-06, Area B) was generally supported.

- The preferred alternative of Limited Action for the Disposal Pond (Site TSF-07) was generally supported, although comments showed some preference for alternatives that remove or treat contamination.

- The reevaluation of alternatives for the Burn Pits (Sites TSF-03 and WRRTF-01) presented in the revised Proposed Plan resulted in the selection of Containment with a Native Soil Cover as the preferred alternative. Comments were largely nonsupportive of this action, as they were in the previous preferred alternative, because the alternative does not remove or treat contaminants. Comments noted that another alternative does involve removal and costs approximately the same.

- The removal of the Mercury Spill Area (Site TSF-08) from this ROD for use in a phytoremediation treatability study received positive support, in strong contrast to the previous predominantly negative support of a removal alternative preferred in the original Proposed Plan.

- Limited Action, the original preferred alternative for the Fuel Leak (Site WRRTF-13), received relatively low support; specific objections were that it would leave contamination in place and not be cost-effective. The revised Proposed Plan's selection of excavation and land farming had higher community acceptance; aspects that were questioned are effectiveness and the plan for implementation.

2. BACKGROUND ON COMMUNITY INVOLVEMENT

The Proposed Plan for WAG 1 was originally released in February 1998. During the 30-day public comment period, three public meetings were held, in Idaho Falls, Boise, and Moscow. The comment period was extended an additional 30 days in response to requests from members of the public.

In response to comments on the Proposed Plan, the Agencies revised and re-released it in November 1998. During the revision, after review of public comments and newly available technical information, the preferred alternatives were reevaluated for several sites and, in a few cases, changed. Public meetings were not repeated after the release of the revised Proposed Plan, but a public comment period was provided and again extended to 60 days. All written comments received before the close of the comment periods, and oral comments made during the formal comment session of each public meeting, are responded to by the Agencies in this Responsiveness Summary.

The public meetings each included an informal question-and-answer session as well as the formal public comment session. The meeting format was described in published announcements and meeting attendees were reminded of the format at the beginning of each meeting. The informal question-and-answer session was designed to provide immediate responses to the public's questions and concerns. Several questions were answered during the informal question-and-answer periods during the public meetings on the Proposed Plan. This Responsiveness Summary does not attempt to summarize or respond to issues and concerns raised during that part of the public meeting. However, the Administrative Record for WAG 1 contains complete transcripts of these meetings.

3. SUMMARY OF COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

Comments and questions received during the public comment period are summarized below. The comments were grouped into topics, according to the issues they focused on, and were then summarized into succinct statements, to capture the significant issue or topic discussed, or information requested. The purpose is to provide, as required by EPA guidelines for Responsiveness Summaries, a clear and concise measure of: (1) which aspects or elements of the alternatives the community supports, opposes, or has reservations about, and (2) general concerns about the sites and the CERCLA process at those sites.

The objective of the summary is to provide for the community and Agency decision-makers a synopsis of community preferences and concerns, and Agency responses. Although the summarized statements rephrase, for brevity, the original verbatim comments submitted, they in no way replace them and are not intended to alter their focus. Bracketed numbers at the end of each summarized issue statement identify the original comment or comments, which can be referred to in Appendix A for the complete original discussions or questions from which the summary statements of significant concerns were condensed.

Appendix A contains the original comments in their entirety, either as scanned written submissions or as public meeting formal comment period transcripts. Each document is annotated to indicate the comments used to prepare the Responsiveness Summary. The documents are numbered separately in three series: comments in response to the February Proposed Plan (F1 through F12); comments in response to the November Proposed Plan (N1 through N7); and comments transcribed during the formal comment sessions of the public meetings (T1 through T3). Indexes in Appendix A list the comments by commenter, by response number, and by topic.

The responsiveness summary begins with a group of questions and comments on INEEL environmental remediation goals, the community relations process, and the budget and planning process for TAN remediation. The second group of questions and comments concerns the comprehensive RI/FS and the activities carried out during this process. The third group of questions and comments focuses on the individual sites retained for remedial action under this ROD, their description, and the alternatives developed and evaluated for them. The final group covers tangential but significant concerns, which some commenters felt were related to TAN remediation. Within the first three groups of questions and comments, issues are presented in an order parallel to the development of topics in the Proposed Plan. A total of 83 issues or topics are identified in this summary.

3.1 WAG 1 Cleanup and Public Participation

3.1.1 Overall Goals and Structure of the INEEL Environmental Restoration Program

1. Is there a clear need for action? Isn't the INEEL too far away from population areas to justify this time and expense? Is this material really dangerous to anyone that handles it? Or are there more important uses for federal money? [F2-2, F2-3, F6-8]

   Response: The DOE is required to clean up inactive waste sites at the INEEL if they pose a risk to human health or the environment. Cleanup is required by the Superfund Program, which was passed by Congress in 1980 to eliminate health and environmental threats posed by hazardous waste sites. The laws implementing the Superfund program have a "bias for action." This means that remedial action (cleanup) is emphasized. The laws also stress the importance

of permanent remedies. The Agencies (DOE, EPA, and the State of Idaho) have agreed to thoroughly investigate, and undertake and complete appropriate response actions as necessary to protect human health and the environment. This agreement is documented in the Federal Facility Agreement and Consent Order (FFA/CO).

Cleanup activities must be cost-effective. Cost-effectiveness is determined by evaluating three of the five balancing criteria to determine overall effectiveness: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; and short-term effectiveness. A remedy is considered to be cost-effective if its costs are proportional to its overall effectiveness.

The Agencies have determined in this ROD which sites at TAN could pose risks to human health and the environment if they are not cleaned up. Although these sites are not close to major population centers, current and future workers and future residents could be exposed to risks from the sites.

2. What is the overall remedial action strategy? Please explain why some remedies leave contamination in place while others remove it. [F6-9]

   Response: The EPA's guidelines direct the remedy selection process. The goal is to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste. In selecting a remedy, therefore, the guidelines make a preference for "active response measures," or treatment. Remedies that involve treatment are most likely to be appropriate measures for waste that is highly toxic, highly mobile, or liquid. For waste that poses a relatively low long-term threat or where treatment is impracticable, engineering controls (such as containment) are considered appropriate. Institutional controls (such as deed restrictions) may be used to supplement engineering controls, but shall not substitute for active response measures (for instance, treatment or containment) as the sole remedy unless the evaluation of alternatives shows that active response measures are not practicable.

   More information on how remedial actions are developed and evaluated can be found in the regulations implementing CERCLA. They are available in Volume 40, Part 300.430 of the Code of Federal Regulations (40 CFR 300.430) in many libraries, through the Government Printing Office, or via the Internet (see, for instance, the EPA's web site at **http://www.epa.gov**).

3. Does the cleanup cause economic hardship by eliminating jobs? [F2-3, F2-5]

   Response: The remedial actions proposed in this ROD do not require halting any ongoing work. CERCLA cleanup focuses only on inactive sites. Therefore, no jobs will be eliminated by the cleanup activities.

4. Most commenters agreed that remediation is needed. However, opinions on WAG 1 remediation varied in supportiveness. One comment characterized the proposed actions in general as "illegal dumping." Another comment said the remedial alternatives fail to meet ARARs. Others commended the INEEL for "expert work," and described the Proposed Plan as "complete," "in more detail," and "more thought out" than others. [F4-2, F10-1, N3-2, N3-7, N3-16, N7-3, T1-1]

Response: The investigation and cleanup process and schedule for TAN have complied with the FFA/CO for the INEEL signed in 1991. Every reasonable effort is made to ensure that TAN remediation activities contribute to the ultimate goal of protecting human health and the environment by use of recognized engineering and institutional responses, that meet standards for protectiveness identified by the Agencies. These standards (ARARs), we're identified in the comprehensive RI/FS and this ROD and will be enforced by the Agencies. The remedies proposed for WAG 1 sites are in no way illegal.

The CERCLA process carried out for TAN included all required community relations activities to ensure that the public had appropriate opportunities for involvement in a wide variety of site-related decisions, including site analysis and characterization, alternatives analysis, and remedy selection. The public meetings, the Proposed Plans and associated comment periods, and the Administrative Record all provided opportunities for the community to learn about the WAG 1 remediation and inform the Agencies about their concerns. The Agencies hope that the WAG 1 CERCLA process with its public comment opportunities, and other regulatory hearing processes required by RCRA, will help build trust in the INEEL's path forward.

5. How will "legacy" and "investigation-derived" waste be dealt with? The statement in the revised Proposed Plan that investigation-derived waste has been dealt with throughout the investigation process fails to mention the 25,000 "legacy samples" from years of CERCLA investigation that were recently dispositioned by the INEEL. [F7-20, N1-6]

   Response: Legacy waste is the formal term used by the DOE's Environmental Management Program for the backlog of stored waste remaining from the development and production of U.S. nuclear weapons, about which a permanent disposal determination remains to be made. No legacy waste has been or will be generated by the CERCLA process at TAN, nor does the WAG 1 investigation include the program for their disposal.

   Investigation-derived waste is contaminated soil, debris, liquid, sampling equipment, and personal protective equipment generated during site characterization and removal activities. It includes samples returned from analytical laboratories. Actions taken prior to or during cleanup will include appropriate disposal of WAG 1 investigation-derived waste in accordance with federal and state regulations and the CERCLA process.

6. When "cleanup" is complete, how clean will WAG 1 be? Will contamination remain over the Snake River Plain Aquifer? [N5-7]

   Response: The goal of the actions taken under this ROD is to reduce risks posed by contamination to levels that protect human health and the environment. Sites will be cleaned up to meet the remedial action objectives (RAOs) specified in the comprehensive RI/FS, the revised (November) Proposed Plan, and the ROD for WAG 1, wherever that is practicable given considerations of technical feasibility and cost-effectiveness, as directed under CERCLA. The RAOs are based on the results of the human health risk assessment (HHRA) and are specific to the contaminants of concern (COCs) and exposure pathways. To meet these RAOs, final remediation goals (FRGs) were established to ensure a risk-based protectiveness of human health and the environment by providing unrestricted land use in 100 years. Any contamination left in place by the actions taken under this ROD will be below these levels, or will be prevented by engineering and institutional controls from completing a pathway to human receptors or the environment. The CERCLA process followed in the comprehensive RI/FS evaluated potential groundwater impacts from TAN release sites to ensure that groundwater quality is not affected. Groundwater remediation actions were required by the

1995 ROD for the TSF-05 Injection Well and are on track to meet remedial objectives. Monitoring will continue to be carried out to verify the protectiveness of TAN CERCLA actions, where appropriate.

3.1.2 Public Participation and Community Relations

7. Several commenters expressed appreciation for the opportunity to comment on the Proposed Plan. The Agencies were commended for their willingness to grant comment period extensions and to accept late comments from the public. Appreciation was also expressed for the public meetings. The public meeting presentations were described as informative, thorough, and useful. One commenter, a senior citizen, expressed some regret that meetings are held only during the evening in towns some distance from his home, which prevents him from attending. [F2-1, F4-1, F6-21, N4-1, N5-1, T2-1]

   Response: The Agencies encourage citizen involvement in decision making at the INEEL. To ensure opportunities for public interaction with project representatives, public meetings are conducted at multiple locations across the state to ensure that interested parties can participate, despite their distance from the INEEL itself. The WAG 1 Proposed Plan was revised extensively and re-released in direct response to public comments. The comment periods for both Proposed Plans were extended in response to public requests for additional time to participate in the decision-making process. A broad variety of topics are discussed in the informal portions of the public meetings, in response to the concerns of the people who attend. A variety of materials on the many ongoing cleanup programs are available at the meetings. In addition, the INEEL provides other avenues for public involvement, including tours and briefings. Postal addresses, telephone numbers, e-mail addresses, and Internet site addresses are provided in each Proposed Plan for citizens to get additional information, briefings, or tours from Agency and project representatives.

8. Several commenters on the original Proposed Plan strongly suggested that it be revised and re-released. They argued that both its communication style and content precluded public review, The decision to issue a reorganized, revised Proposed Plan in November 1998 received strong public support. Several commenters strongly approved of the action. [F3-1, F7-1, F7-3, F12-1, N3-1, N7-1]

   Response: In response to public comment, the Agencies revised the Proposed Plan and re-released it. During the review of comments on the Proposed Plan, the Agencies reassessed their initial determination for some WAG 1 sites that the preferred alternative provided the best balance between criteria. The Agencies factored in newly available information and the points of view expressed by the public. A Feasibility Study Supplement was prepared to consider several additional alternatives and reevaluate the alternatives. The Proposed Plan was revised accordingly.

9. One commenter expressed concern that the public also be given an opportunity for formal participation in the proposed INEEL CERCLA Disposal Facility (ICDF) development, which may form part of the WAG 1 remedial response, but has not been fully described in terms of its siting, design, capacity, lifespan, and waste acceptance criteria. [N5-6]

   Response: The Agencies encourage citizen involvement in decision-making at the INEEL. Although the ICDF may be selected as the on-Site disposal facility for TAN materials during the WAG 1 remedial design, the development of the ICDF itself is being planned under Waste Area Group 3 at the Idaho Nuclear Technology and Engineering Center (INTEC; formerly the

Idaho Chemical Processing Plant). A description of the proposed ICDF, including its siting, design, capacity, lifespan, and waste acceptance criteria, was presented in October 1998, in the Proposed Plan *for Waste Area Group 3 at the Idaho Chemical Processing Plant.* The Record of Decision for Waste Area Group 3 is expected to be finalized in September 1999.

3.1.3 Content and Organization of the Proposed Plan

10. Numerous commenters who reviewed the Proposed Plan released in February 1998 criticized it, claiming it had unclear language, poor readability and format, and inconsistencies and perceived weaknesses in the presentation of remedial alternatives. [F7-1, F7-3, F7-4, F7-44, F9-3, F12-1, F12-2, F 12-6, F 12-7]

    Response: The Proposed Plan was revised and re-released in response to comments made by the public. Once the decision was made to revise the plan, the opportunity became available to reevaluate all the alternatives that had been developed. For several release sites, additional technical information regarding remedial alternatives became available after February, and this was investigated and considered. Two treatability studies were carried out for one site, and further investigations of contamination were carried out at two sites. Additional alternatives were developed for several sites, and the preferred remedy for five sites was changed. As a result, the revised Proposed Plan issued in November 1998 not only used an improved format and wording, but also presented an amplified set of cleanup alternatives forming the basis for the best final selection of remedies. The treatability studies and additional contamination evaluations confirmed the selection.

11. The revised Proposed Plan, released in November 1998, was praised for improved readability, clearer organization, and fuller information. Some criticisms remained, however, mainly concerning stylistic points. [N1-1, N4-2, N5-2, N6-1, N6-3, N7-2, N7-4]

    Response: An effort was made to respond to specific areas that concerned readers, which included organizing a focus group with members of the public to ask exactly what items were hard to read or understand, and hear ideas on improvement. Many changes resulted from readers' requests.

    Word usage and punctuation are aspects of the document's style, which follows a style guide established by INEEL for this type of public, yet technical, document. The comments reflecting one reader's usage preference (see Comments N6-1 and N6-3) are noted, and may be considered in future style guide revisions.

    One comment (N1-1) questioned why the revised Proposed Plan did not specifically describe and discuss the changes made from the first Proposed Plan. The changes in technical content are described in detail in the Feasibility Study Supplement. The revised Proposed Plan is a summary only, containing information required for the public to review the final set of alternatives and preferences under consideration. In preparation of the revised Proposed Plan, it was clear that as a stand-alone, document, it should not contain numerous references to a plan that it superseded. The need to review two versions of the same plan should not only be unnecessary, but could confuse readers who had not read or did not have the previously issued plan. The decision was made, therefore, to issue a revised Proposed Plan that is based directly on the comprehensive investigation documents, as required. This ROD provides a record of the revision reasons and process.

12. Several commenters suggested types of information they feel it would be helpful to include, such as an appendix or readily available supplement that explains the risk assessment method(s) used in the plan; a statement regarding the 30-year half-life of cesium-137; and a list and glossary of acronyms used in the Proposed Plan. One commenter believes the Proposed Plan should, include more data on all operable units, including sampling data, data sources, maximum contaminant levels, and the proposed action or no action decisions. Other commenters, especially those reviewing the February Proposed Plan, indicated they felt the Proposed Plan contained too much detail. [F7-44, F10-8, N3-2, N3-9, N4-5, N4-6, N6-4]

    Response: The Agencies appreciate all suggestions from the public on types of information that could help a Proposed Plan better serve its purpose, The Proposed Plan is an important community relations activity undertaken as part of the CERCLA process. The EPA's CERCLA guidelines define a Proposed Plan's content and purpose (see 40 CFR 300.430 and *Guidance on Preparing Superfund Decision Documents*, OSWER Directive 9355.3-02).

    The Proposed Plan, under CERCLA guidelines, supplements and is based on the comprehensive RI/FS, "but is not a substitute for that document." The Proposed Plan provides a "brief summary description" of: (1) the remedial alternatives evaluated, (2) the alternative that is preferred, and (3) the information that supports the selection of the preferred alternative. Other sections of the Proposed Plan (the history and nature of site contamination, previous actions, and risk assessment) are merely summaries of more detailed investigations, and are included as background information.

    Many commenters on both WAG 1 Proposed Plans emphasized their strong desire for clear language and a straightforward format. The Agencies strive to provide the information required by CERCLA in the Proposed Plan with both clear language and organization. For readers who seek more comprehensive detail on any aspect of the investigation process, the plan provides references to the relevant sections of the comprehensive RI/FS and other documents in the Administrative Record that present in full the information from which the Proposed Plan is derived. The complete details of operable unit investigations, including sampling data, data sources, and maximum contaminant levels, can be found in the RI/FS, Track 1, Track 2, and other WAG 1 documents in the Administrative Record.

    Risk assessment methods can only be summarized in the Proposed Plan, but are always described in detail as required in the RI/FS on which the plan is based.

    The suggestion that the short half-life of cesium-137 (30 years) be brought forward in the Proposed Plan is an excellent one. The relative shortness of this radionuclide's half-life is important in development and evaluation of remediation alternatives for contamination sites that contain this element. Including this information enhances readers' understanding of the proposed alternatives in a brief and straightforward manner. Information on the half-lives of radionuclides has been included in subsequent Proposed Plans at the INEEL, such as those prepared for WAG 4 (Central Facilities Area) and WAG 5 (Power Burst Facility/Auxiliary Reactor Area).

    Proposed Plans use very few acronyms, as part of the effort to make the documents understandable to the general public. All acronyms are defined when they are first used. As a standard practice, technical documents such as the comprehensive RI/FS and this ROD provide a list of all acronyms used following the table of contents in the document.

3.1.4 Current and Future Activities at TAN

13. How will the "remaining potential release sites" be located and assessed? How are they known to exist, and what specific existing policies are currently in place to protect the environment? [F7-5, N1-7]

    Response: The possibility exists that contaminated environmental media not identified by the INEEL FFA/CO or in this comprehensive investigation will be discovered in the future as a result of routine operations, maintenance activities, and decontamination and dismantlement (D&D) activities, and review of previous decontamination and dismantlement activities. These will be addressed using the process for new site inclusion defined in the FFA/CO and will be remediated pursuant to the RAOs and final remediation goals (FRGs) identified in this ROD. The comprehensive RI/FS process at WAG 1 investigated all known actual or potential release sites. Active operations and cleanup activities at TAN are covered under various company manuals and environmental restoration management control procedures.

3.1.5 WAG 1 Remediation Planning and Costs

14. The availability of long-range funding to complete the cleanup must be assured. Where is the money coming from to pay for any residual effects after the 100-year period of control? What guarantee is there that the money will be available to complete remediation and monitoring during the 100-year period? [F5-1, F6-20, F10-11, N3-10]

    Response: The federal government has an obligation to provide adequate institutional controls (i.e., limit access) to areas that pose a significant health and/or safety risk to the public and workers until that risk diminishes to an acceptable level for the intended purpose. Achievement of this obligation hinges on continued Congressional appropriation of sufficient funds to the responsible government entity charged to maintain the institutional controls for as long as necessary and as long as the federal government of the United States remains viable.

15. A commenter stated: "An argument that any reasonable discount rate would discount costs after 100 years to a negligible amount is not appropriate or consistent with DOE policy in evaluating environmental liabilities. The government should not discount risks to future generations, and, indeed, the present evaluations of environmental liabilities by DOE and other government agencies do not do so." The commenter proposed that revisions to the conduct of the RI/FS and the ROD would extend to other cases besides the Test Area North. [F5-5]

    Response: The meaning of the comment may not be fully understood. All INEEL DOE-ID assessment cost estimates are prepared in the same manner. The feasibility study cost estimates and revisions thereof present estimates calculated as current year dollars, as net present value (NPV) dollars, and as escalated dollars. Only NPV cost estimates are presented in the body of the FS and the Proposed Plan, pursuant to CERCLA requirements. DOE funding, however, is not based on NPV estimates. Further details about the cost estimates are provided in Appendix J of the comprehensive RI/FS.

16. One commenting group suggested that the public might support lower-cost alternatives derived from use of less conservative risk estimates. [N4-4]

    Response: Uniform CERCLA regulations and process require that the risk assessment estimates used in the RI/FS be based on the goal of reducing risk to acceptable levels. The

alternatives subsequently considered and the costs estimated for them are likewise required to relate only to actions that reduce the risks to acceptable levels.

17. The high cost of the Limited Action alternative was challenged in several comments as an "overestimated" figure for a "do-nothing" alternative. [F6-8, F6-10, F6-19, N2-4]

    Response: Limited Action is not a "do nothing" alternative. It requires that certain actions be taken to protect human health and the environment and comply with regulations. The alternative can include design, construction, and maintenance of physical and institutional control measures, as well as required environmental monitoring, documentation, and reporting. Cost estimates and assumptions are provided in Appendix J of the comprehensive RI/FS. Capital costs for Limited Action typically include design and construction of any institutional and physical controls that must be added to those already existing, and documentation and reporting during this phase. Physical controls may include perimeter security fencing with signs, and water-diversion controls. Operations and maintenance costs for Limited Action include inspection, sampling and analysis, routine maintenance, and reporting for a period of 100 years or until the review verifies that the contamination is below levels that pose a risk to human health or the environment. (Some contaminants, such as cesium-137, naturally attenuate, or decrease, over time.)

    The costs of Limited Action, therefore, can be relatively high for some sites when extensive monitoring and institutional controls are required and must be continued for 100 years. In contrast, active response measures, which provide a permanent and immediate solution through treatment or removal, may cost less for some sites, because no further monitoring or controls are needed once the remedy is completed. CERCLA requires that treatment or removal be preferred over limited action. At sites where both active response measures and limited action responses meet all criteria and are equal in cost-effectiveness, an active response remedy will be selected. Limited Action is considered for selection only when active measures are determined to be impracticable or not cost-effective.

18. The cost of placing TAN waste in the proposed INEEL CERCLA Disposal Facility (ICDF) must be assigned. [N7-6]

    Response: The actual on-Site disposal location for TAN materials, which could be the Radioactive Waste Management Complex, the proposed ICDF, or another facility, will be determined during remedial design following imp mentation of this ROD. The revised cost estimate to the comprehensive RI/FS included a $104 per cubic yard tippage (disposal) fee for the on-Site disposal facility for cost comparison purposes. Other cost estimate details and assumptions are contained in Appendix J of the comprehensive RI/FS. The revised cost estimate, along with the comprehensive RI/FS and related documents, is in the Administrative Record.

3.2 The CERCLA Process at WAG 1

3.2.1 The Comprehensive RI/FS

3.2.1.1 General Comments on the Comprehensive RI/FS

19. One commenter disapproved of the publication of the February Proposed Plan well ahead of the FFA/CO deadlines. The commenter believed that time existed and should have been used to conduct additional investigation and treatability studies prior to finishing the comprehensive RI/FS and preparing the Proposed Plan. [F7-2]

    Response: This publication followed the FFA/CO schedule. The schedule had to be revised by the Agencies to permit a second Proposed Plan to be prepared and released. Any additional investigations carried out upon implementation of this ROD would be to support the design of the selected remedies.

20. This and all other RI/FS and ROD documents should describe (1) for each alternative, the residual contamination remaining after remediation is completed; (2) the level of risk remaining after 100 years; and (3) how human health and the environment will be protected from residual contamination after 100 years. [F5-2]

    Response: The selected action for each site that was considered in the WAG 1 comprehensive RI/FS must satisfy the CERCLA threshold criteria (Overall Protection of Human Health and the Environment, and compliance with ARARs). These criteria require that after remediation is completed, any residual contamination is below acceptable threshold levels and that if contamination remains in place, protectiveness of human health and the environment is ensured by containment and institutional controls, as appropriate. The final remediation goals for each site are specified in Part II, Sections 7, 8, and 9, of this ROD. An evaluation of how human health and the environment will be protected from residual contamination by each alternative was made in the comprehensive RI/FS as part of the evaluations of alternatives for retained sites. Details on residual contamination amounts were also presented in the Screening Data Gap Analysis, an appendix to the *Work Plan for Waste Area Group 1 Operable Unit 1-10 Comprehensive RI/FS*.

3.2.1.2 Inclusion of Sites in the Comprehensive RI/FS

2. Explain the concept of "co-located facilities," why they are discussed in this plan, whether they should be covered under CERCLA, the Resource Conservation and Recovery Act (RCRA). or the Toxic Substances Control Act (TSCA), how they will be cleaned up and what the public participation process will be. Specific sites mentioned are TAN-616, TAN-666, LOFT-02 (Disposal Pond), RPSSA Buildings 647 and 648, and the pads and soil contamination area. [F7-6, F7-7, F7-21]

    Response: Co-located facilities is a term developed by DOE to describe buildings and structures near or adjacent to sites included in the comprehensive CERCLA RI/FS process and that are still in use or in standby mode. During the remedial investigation, an analysis of 89 such facilities and structures was performed to determine the extent to which they could contribute to future risk at TAN through past releases or potential future releases. These sites could contribute future risk in two ways. First, there could be contamination present below a building or structure or in portions of the structure (such as in piping) that it would not be

practical to evaluate until the structure is dismantled. Second, a building, structure, or activity may pose the potential for a future release to the environment. The co-located facilities analysis evaluated the possibility for these scenarios through process knowledge of past activities at these and similar facilities. Only four facilities were found to have potential to contribute to future risk at TAN: The TAN Hot Shop (TAN-607), the asphalt pads outside the Radioactive Parts Service and Storage Area (RPSSA) buildings (TAN-647 and -648), and the two Radioactive Liquid Waste Treatment and Transfer/Storage buildings (TAN-616 and -666). None of these pose an imminent threat of release; their retention is based primarily on remote accident scenarios or documented past releases at these or similar sites. As part of active operations at TAN, these sites are covered under appropriate management control procedures. The potential for these retained sites to contribute to current risk estimates is very remote. The analysis of co-located facilities and the management control procedures that apply to them are in Appendix D of the comprehensive RI/FS.

TAN-616 is a liquid waste treatment plant. It is inactive and will receive further evaluation because of potential for release of contaminants from sludge in tanks and pipes.

TAN-666 is a radioactive liquid waste transfer and storage building. It is not in use. It is authorized for operation under INEEL Emergency Plan/RCRA Contingency Plan.

LOFT-02 is a disposal pond constructed in 1971 for LOFT experiment wastewater and now used only for sanitary wastewater and boiler blowdown from the SMC operations. The comprehensive RI/FS documented that contamination from metals in soil at the LOFT-02 pond is below levels that pose risk to human health. Threats to ecological receptors from this site will be addressed under the WAG 10 site-wide comprehensive RI/FS. More information on this site is available in the Administrative Record for WAG 1.

The Radioactive Parts Service and Storage Area (RPSSA) Buildings TAN-647 and TAN-648 and the outside pads and soil contamination area were designated Site TSF-43 for the comprehensive RI/FS, TAN-647 and TAN-648 are active storage buildings operating under the INEEL Emergency Plan/RCRA Contingency Plan and will be evaluated for releases when they are dismantled. The soil beneath the asphalt pads outside the buildings is contaminated. The contamination is currently fixed in place by the asphalt covers and will be evaluated during D&D of the buildings. The soil contamination beyond the asphalt pads was evaluated as part of TSF-06, the TAN/TSF Soil Area. TSF-06, Area B (the Soil Contamination Area South of the Turntable), is the only portion of TSF-06 that was determined to require remediation. TSF-06, Area B, is being cleaned up in accordance with the decisions implemented in this ROD.

22. Several commenters contend that the RI/FS was not comprehensive, because it failed to evaluate one or more sites. Their comments list sites that were not included and request explanation of what contamination is present, whether and under what program they were remediated, and if remediation is required but has not yet been carried out, when and how it will be. The sites are: LOFT-02 Disposal Pond; TSF-05 TAN Injection Well; TSF-06 TSF TAN/TSF- 1 Contaminated Soil, TSF-06, Area 8, ANP Cask Storage Pad: TSF-06, Area 10, HTRE Reactor Vessel Burial Site; TSF-07 Disposal Pond; TSF- 10 Drainage Pond; TSF-20 TSF Two Neutralization Pits North of TAN-607, TSF-21 IET Valve Pit; TSF-43 RPSSA Buildings 647/648 and Pads; the TAN Pool at the TAN-607 Hot Shop; WRRTF-03 Evaporation Pond; and WRRTF-04 Radioactive Liquid Waste Tank). [F7-6, F7-21, F7-22, F7-45, F10-3, F10-12, N1-2, N1-3, N1-4, N1-5, N1-12, N3-3, N3-4, T3-1]

Response: The Proposed Plan is a summary of those sites at TAN where remedial action is required to protect human health and the environment from risks posed by past releases of contamination. The Proposed Plan is based on the comprehensive RI/FS for WAG 1, which was the culmination of nearly 50 investigations of potential release sites at TAN. These investigations, which began after the 1991 signing of the FFA/CO for lNEEL, determined that 94 potential release sites at TAN required study. A 1995 Record of Decision initiated action at 2 sites and determined that no action or no further action was needed at 30 sites. The comprehensive RI/FS evaluated the remaining 62 potential release sites and determined that no action or no further action was needed at 53 sites, and threats to human health required remedial action at 9 sites. One of these 9 sites, the Mercury Spill-Area (TSF-08) was selected for a treatability study that will be conducted under WAG 10. Two sites do not pose a threat to human health but do pose a risk to the environment: the LOFT-02 Disposal Pond and the WRRTF-03 Evaporation Pond. These sites also will be addressed under WAG 10. As part of the comprehensive WAG 1 risk assessment, all TAN buildings and structures that are still active or inactive but in standby mode were also evaluated to determine whether future releases from them could occur that would affect the cumulative and comprehensive assessment of risk. As documented in Appendix D of the comprehensive RI/FS, only 4 of the 89 buildings or structures could pose risk in the future. Appendix D also describes the programs in place to prevent risks to human health or the environment. The information and evaluations leading to these decisions is contained in the Administrative Record. The primary decision documents are the OU 1-07B ROD, the comprehensive RI/FS, the Feasibility Study Supplement, and the Track 1 and Track 2 reports. The Agencies believed that the Proposed Plan issued in February 1998 and the revised Proposed Plan issued in November 1998 summarized this information adequately. To resolve any confusion or lack of clarity that may have resulted, the following list recaps the disposition of the sites in question.

- LOFT-02 Disposal Pond. This disposal pond was constructed in 1971 for LOFT experiment wastewater and is now used only for sanitary wastewater and boiler blowdown from the Specific Manufacturing Capability (SMC) operations. The comprehensive RI/FS documented that contamination from metals in soil at the LOFT-02 pond is below levels that pose risk to human health. Threats to ecological receptors from this site will be addressed under the WAG 10 site-wide comprehensive RI/FS. More information on this site is available in the Administrative Record for WAG 1.

- TSF-05 Injection Well. Groundwater contaminated by this disposal well is undergoing remediation in accordance with the 1995 ROD implemented for this site. More information on this site is available in the Administrative Record for WAG 1.

- TSF-06 Soil Contamination Area. The portions of this site that were determined to require remediation will be cleaned up in accordance with the decisions implemented in this ROD. More information on this site is available in the Administrative Record for WAG 1.

- TSF-06, Area 8, ANP Cask Storage Pad. Part of this site is currently included within the active Radioactive Parts Service and Storage Area (RPSSA) facility, which will be evaluated during future dismantlement. Sampling during the risk assessment indicated that the soil contamination at this site is below the levels at which remediation is required. More information on this site is available in the Administrative Record for WAG 1.

- TSF-07 Disposal Pond. The Agencies are not aware of any previous removal actions at this site. The portions of this site that were determined to require remediation will be

cleaned up in accordance with the decisions implemented in this ROD. More information on this site is available in the Administrative Record for WAG 1. The original comment (see Comment F7-45) may have intended to specify Site TSF-17, which is described below.

- TSF-10 Drainage Pond. TSF-10 is a drainage pond (rather than a disposal pond as indicated by the comment). Track 2 evaluation of this surface-water discharge pond determined that suspected contaminants are below levels that require remediation. More information on this site is available in the Administrative Record for WAG 1.

- TSF- 17 Two Acid Neutralization Pits North of TAN-649. Sampling after a 1993 remediation found no evidence that remaining contamination is present at levels that would require remediation. More information on this site is available in the Administrative Record for WAG 1.

- TSF-20 Two Neutralization Pits North of TAN-607. Sampling after a 1993 remediation found no evidence that remaining contamination is present at levels that would require remediation. More information on this site is available in the Administrative Record for WAG 1.

- TSF-21 IET Valve Pit. Sampling after a 1993 remediation found no evidence that remaining contamination is present at levels that would require remediation. More information on this site is available in the Administrative Record for WAG 1.

- TSF-43 (RPSSA Buildings TAN-647 and TAN-648 and outside pads). This is part of an active facility and will be further assessed during removal. The contamination that is present under the outside pads is fixed in place with an asphalt cover. The contamination that lies beyond the asphalted area was evaluated as TSF-06, Soil Contamination Area South of the Turntable, and the portion of this site that was determined to require remediation will be cleaned up in accordance with the decisions implemented in this ROD. More information on this site is available in the Administrative Record for WAG 1.

- TAN Pool (part of TAN-607 Hot Shop). The TAN Pool is part of an active facility. Potential threats to human health and the environment from this site will be addressed during its removal from use. More information on this site is available in the Administrative Record for WAG 1. As part of an active facility, the TAN Pool is not being addressed under this CERCLA action.

- WRRTF-03 Evaporation Pond. The comprehensive RI/FS documented that discharges to this pond are below levels that pose risk to human health. Threats to ecological receptors from this site will be addressed under the WAG 10 site-wide comprehensive RI/FS. More information on this site is available in the Administrative Record for WAG 1.

- WRRTF-04 Radioactive Liquid Waste Tank. During tank removal in 1993, it was determined that no releases from the tank had occurred. More information on this site is available in the Administrative Record for WAG 1.

- TSF-06, Area 10, Buried Reactor Vessel. The irradiated reactor vessel is contained in a metal storage tank and is believed to be more than 10 feet below ground surface. No

pathway to human or ecological receptors exists. More information on this site is available in the Administrative Record for WAG 1.

3.2.1.3 Classification of Contaminants

23. The presence of mixed low-level waste must be addressed by describing where it is present and developing alternatives that meet regulatory requirements for a permanent disposal of it. [F10-5, N3-5, T3-2]

    Response: Mixed low-level waste (MLLW) contains both hazardous and low-level radioactive components. The contents of the V-Tanks (TSF-09 and TSF-18) and the PM-2A Tanks (TSF-26) are considered mixed low-level waste (MLLW). Regulations applicable to these sites are listed in Part II, Section 7, of this ROD.

24. A comment suggests that much more data should be presented to the public on each Operable Unit and its characterization to allow adequate decision-making. Two tables were included with the comment to illustrate the data that are suggested as necessary. [F10-8]

    Response: In accordance with CERCLA guidance, the Proposed Plan is a brief summary of all the alternatives studied in the detailed analysis phase of the comprehensive RI/FS, highlighting the key factors that led to the identification of the preferred alternative. The Administrative Record for WAG 1 contains all data used by the Agencies to assess risks at these sites and select a response action. Large amounts of data were compiled for each Operable Unit, much of which was contained or referred to in the comprehensive RI/FS. A reasonable attempt was made In the Proposed Plan and the comprehensive RI/FS to reference sources completely. Interested citizens who would like more information about specific aspects of the project are encouraged to contact the Agency representatives or the INEEL at (800) 708-2680.

3.2.2 Risk Assessment

25. The risk assessment is understood to be complicated, but clarification is required on several points. Are there two methods of risk calculation, or just several assumptions within a single method? Also, is risk assessment carried out beyond 100 years? If so, it seems a futile exercise and might lead to inappropriate expenditure of resources. Several commenters asked for more specific information about the risks to human health from lead, polychlorinated biphenyls (PCBs), and mercury. Finally, what standards are used to measure the risk from diesel fuel? [F1-1, F2-4, F7-15, N1-44, N4-7]

    Response: The comprehensive risk assessment process uses one method of risk calculation, with multiple assumptions and calculations, depending on the type of contaminant and media. The future resident exposure scenario evaluated in the comprehensive RI/FS considers a person who moves to the site in 100 years and lives there for 30 years (Section .3.1 of the comprehensive RI/FS provides more details). Risk assessment is a complex task, and the section summarizing this in Proposed Plans continues to be worked on intensively in every successive Proposed Plan, to improve its clarity while keeping it short. Suggestions on which elements of this section are clear, and which still need improvement, are appreciated.

    Mercury and lead are naturally occurring metals that have several pure and compound forms, all of which are toxic to humans. Ingestion and inhalation are the major routes of exposure. The dangers of mercury and lead are greatly increased by their tendencies to persist in the

environment and accumulate in organisms. Mercury and lead can cause short-term illness, permanent impairment, and death in both children and adults. Mercury damages primarily the central nervous system and the kidneys, and can affect the gastrointestinal tract and the lungs. Lead exposure can cause severe damage to the brain and kidneys; as well as gastrointestinal distress. Children are particularly sensitive to the chronic effects of lead, which impairs their growth and development.

Polychlorinated biphenyls (PCBs) are a group of industrial chemicals that were principally used as insulating liquids, valuable for their fire-resistant qualities. However, they were determined to be dangerous to the environment and human health because, when released into the environment, they do not readily break down. PCBs may enter the body through inhalation, ingestion, and direct (skin) contact, where they may damage gastric, reproductive, dermal (skin), and other systems of the body or cause cancer. In the U.S., the manufacture and use of PCBs were phased out beginning in the mid-1970s.

Diesel fuel is a contaminant of concern at the Fuel Leak site (WRRTF-13). The remedial action objective for this site was identified in the revised (November 1998) Proposed Plan as: "Prevent direct exposure to total petroleum hydrocarbon constituents at concentrations over 1,000 mg/kg, in accordance with the State of Idaho Risk-Based Corrective Action guidance." The RAO was changed in this ROD to: "Prevent exposure to petroleum hydrocarbon constituents in accordance with the State of Idaho Risk-Based Corrective Action guidance." The 1,000 mg/kg reference to total petroleum hydrocarbons was removed to conform to the State of Idaho Risk-Based Corrective Action guidance enacted on January 1, 1997. This change is described in Part II, Section 11, of this ROD.

Assessments of risks and hazards from chemicals use national uniform standards determined by scientific testing and agreed upon by agencies such as the EPA. Chemicals and compounds for which toxicity values cannot yet be established (such as PCBs and diesel fuel) use hazard quotients or risk-based guidelines, identified through federal and state regulations. Case study analysis and other research constantly continues to refine and revise the guidelines. The EPA's Internet site **(http://www.epa.gov)** is an excellent source for clear and detailed toxicity information on mercury, lead, and other toxic substances.

26. A comment contends that the public cannot make any decision on the basis of a Proposed Plan that omits data on maximum contamination levels. [F 10-2]

Response: Maximum contaminant levels (MCLs) are standards that measure the maximum permissible level of a contaminant in water delivered to any user of a public system. Water is not an affected medium for the release sites that will be remediated under this ROD. For other contaminated media that are present at the TAN sites discussed in this action, such as soils, risk reduction goals use other measurement standards, as appropriate, which are presented in the comprehensive RI/FS, the Proposed Plan, and this ROD in sections on remediation objectives and goals. The results of sampling and analysis of contamination levels at TAN sites are presented fully in the comprehensive RI/FS, Track 1 and 2, and related WAG 1 documents, available in the Administrative Record. The Proposed Plan, based on these documents, is required to summarize the remedial action alternatives considered for each site at which cleanup is needed, and to identify the preferred alternative and its rationale. It is not intended to be a repetition of !he data provided in the baseline documents.

3.2.2.1 Human Health Risk Assessment

27. Some commenters found risk calculations too conservative. [F6-4, N4-3, N4-8, N6-2]

    Response: Uniform CERCLA regulations/process require that the risk assessment estimates used in the comprehensive RI/FS be based on the goal of reducing risk to acceptable levels. The alternatives subsequently considered and the costs estimated for them are likewise required to relate only to actions that reduce the risks to acceptable levels.

3.2.2.2 Ecological Risk Assessment

28. Please explain how ecological risk is being deferred to WAG 10. [N1-8]

    Response: Ecological risks present impacts to entire populations of plants and animals, and thus require evaluation across the entire population of each species present at the INEEL. The assessment of risk to a site-wide species cannot logically be carried out at any single release site within a waste area group. Sites within a waste area group that have only an ecological risk, therefore, may be evaluated under WAG 10, the final INEEL waste area group comprehensive investigation, and will be remediated as appropriate. Those sites will be assumed to have been cleaned up to meet remedial action objectives for human health.

    The ecological risk assessment process for the INEEL has three phases. Two phases are carried out at the level of the individual WAG; the third phase integrates all the WAG information in a site-wide study. The first phase for the WAG 1 comprehensive RI/FS was a screening-level ecological risk assessment (SLERA), which identified data needs for WAG 1 sites and screened out sites at which no contaminants of potential concern are found. The second phase was a site-by-site evaluation of the risks from contaminants to ecological resources (plants and animals) on the WAG-wide level. The second phase uses an approach parallel to the human health risk assessment. The third phase, which will take place under WAG 10, will be the INEEL-wide ecological risk assessment. It will integrate WAG-level results from WAGs 1 through 9 to evaluate risk to INEEL-wide ecological resources. Effects resulting from past contamination and residual impacts from completed interim or remedial actions will be assessed for their potential to adversely affect populations and communities on an ecosystem-wide basis (that is, over the entire INEEL). Remediation will take place as required following completion of that study,

29. Presentation of actual numbers for risks to ecological receptors would be more helpful for public evaluation. [N7-5]

    Response: This is an excellent suggestion and was immediately incorporated into Proposed Plans in preparation. It is a good example of a way to provide much more information to the public without adding appreciably to the plan's length or complexity. Full details of ecological risk assessment results are contained in Section 7 of the comprehensive RI/FS.

3.2.3 Remedial Action Objectives and Compliance with ARARs

30. What cleanup standard for total petroleum hydrocarbons (TPH) will be used at the Fuel Leak site (WRRTF-13) and why? [F6-7,F7-32,N1-11, N1-49]

    Response: The remedial action objective was identified in the revised (November 1998) Proposed Plan for the Fuel Leak site as: "Prevent direct exposure to total petroleum hydrocarbon constituents at concentrations over 1,000 mg/kg, in accordance with the State of Idaho Risk-Based Corrective Action guidance." The RAO was changed in this ROD to: "Prevent exposure to petroleum hydrocarbon constituent, in accordance with the State of Idaho Risk-Based Corrective Action guidance." The 1,000 mg/kg reference to total petroleum hydrocarbons was removed to conform to the State of Idaho Risk-Based Corrective Action guidance enacted on January 1, 1997. This change is described in Part II, Section 11, of this ROD.

31. Why are there no remedial action objectives to protect the Snake River Plain Aquifer from contamination at the Fuel Leak site? [F7-25, N1-10, N1-46]

    Response: The comprehensive RI/FS determined that contamination at the Fuel Leak site does not threaten the aquifer.

32. Why are there no remedial action objectives for the V-Tanks specifying destruction of PCBs or meeting land disposal restrictions (LDRs)? [F7-24, N1-9]

    Response: The remedial action objective.(RAO) specified is consistent with the RAO used for tank sites throughout all WAGs at the INEEL. Also, destruction of PCBs will be met through specified ARARs, as listed in Part II of this ROD.

33. Is grouting, as part of a remedy, compliant with relevant laws? [F7-36, F10-7]

    Response: No. It has been determined that grouting, as part of a remedy for the V-Tanks (TSF-09 and TSF- 18) or the PM-2A Tanks (TSF-26) will not be compliant with ARARs identified in Part II of this ROD. As a result of this determination, alternatives for these sites that involve grouting to treat or stabilize contaminated media have been eliminated from consideration for selection.

3.2.4 Development of Alternatives

34. It is not clear how the alternatives are developed. [F2-5, F9-6, N5-4]

    Response: The primary objective of the feasibility study is to develop and evaluate remedial alternatives that will protect human health and the environment by removing waste; by eliminating it through treatment; or by controlling, reducing, or eliminating risks posed by each pathway at a site. CERCLA guidance (40 CFR 300.430) directs that the alternatives that are developed include:

    (1) The No Action alternative (which may be no further action if some removal or remediation has already taken place)

(2) One or more alternatives that provide little or no treatment, but protect through engineering and, as necessary, institutional controls

(3) A range of alternatives involving treatment to reduce toxicity, mobility, or volume of contaminants and, as appropriate, an alternative that removes or destroys the contamination

(4) One or more innovative treatment technologies if they offer the potential for equal or better performance or implementability, fewer or less adverse impacts, or lower costs in comparison to demonstrated treatment technologies.

Three criteria are used to develop and screen alternatives: effectiveness (short-term and long-term), implementability, and cost. Alternatives that do not provide adequate protection of human health and the environment or comply with ARARs are to be eliminated from further consideration. This is done first, prior to any other evaluation. Alternatives that are technically or administratively unfeasible or that would require equipment, specialists, or facilities that are not quickly available may be eliminated. If costs of construction or operations and maintenance are grossly excessive compared to overall effectiveness, an alternative may be considered for elimination.

35. What does Limited Action involve that makes it so costly? [F6-10]

Response: Limited Action involves long-term use of institutional controls and environmental monitoring, including 5-year reviews, at any site where contamination remains in place, or where residual contamination remains following treatment or removal. The long-term institutional controls and environmental monitoring may need to be continued through the entire 100-year control period. The cost of these activities may increase the total cost of the Limited Action alternative above that of an immediate solution.

36. In a presentation to the Citizens Advisory Board, the use of concrete as a grouting material was mentioned. Given its lack of stability, why would concrete be preferred to other types of grouting material? [F12-4]

Response: The actual grouting material to be used would be specified in the remedial design. Factors considered in selection would include leachability, durability, the dry mix-to-liquid ratio, and compressive strength, as well as stability. A treatability study for in situ stabilization (grouting) was conducted in 1998 and is documented in the *Final Report, Treatability Study for LMITCO TSF-09 V-1, V-2, and V-3 Tank Waste,* September 1998 (INEEL/EXT-98-00739). Analytical results for waste drawn from the V-Tanks showed that three grouting mixes, all containing some proportion of Portland cement, met the criteria for a suitable stabilization/solidification option. However, grouting to treat or stabilize waste is not part of any remedy selected in this ROD, as detailed in Part II. Alternatives involving grouting for treatment or stabilization of contaminated media were determined not to meet ARARs for the V-Tanks (TSF-09 and TSF-18) or the PM-2A Tanks (TSF-26).

37. The use of the proposed INEEL CERCLA Disposal Facility (ICDF) as an on-Site repository is rejected on several grounds: safety and legality of a location over the Snake River Plain Aquifer; availability; waste acceptance criteria, and design life. [F7-37, F7-40, F7-42, F7-43, F10-4, F10-6, N1-26, N1-30, N3-6, N5-5]

Response: The actual on-Site disposal location for TAN materials, which could be the Radioactive Waste Management Complex (RWMC), the proposed ICDF, or another facility, will be determined during remedial design following implementation of this ROD. The proposed ICDF would be a landfill for low level radionuclide-contaminated soil and debris. Selection of the ICDF for disposal of TAN materials depends at least in part on the timeframe associated with construction of the facility and its waste acceptance criteria. Costs for this facility, however, would likely be much lower than current RWMC disposal fees.

The development of the ICDF itself is being planned under Waste Area Group 3 at the Idaho Nuclear Technology and Engineering Center (INTEC; formerly the Idaho Chemical Processing Plant). A description of the proposed ICDF, including its siting, design, capacity, lifespan, and waste acceptance criteria, was represented in October 1998, in the Proposed Plan *for Waste Area Group 3 at the Idaho Chemical Processing Plant.* The Record of Decision for Waste Area Group 3 is expected to be finalized in September 1999.

3.2.5 Implementation of Alternatives

38. It is hoped that TAN actions will use resident site personnel as the primary labor. [F3-1]

Response: Most of the activities to remediate TAN sites under this ROD will be carried out by contractors, who may use qualified local labor as appropriate. The cost estimates for remedial actions considered under this ROD assume that the job will be competitively bid within the local subcontracting community, and INEEL Site Stabilization wages will apply. It is the contractor's business prerogative to decide whether workers employed by their company will be acquired locally or from out of state sources. The contractor or contractors who carry out remediation activities under this ROD will be required to provide employees who are qualified to do the necessary work.

39. Will revegetation use native plant species? [N6-12]

Response: DOE guidance on revegetation is used to determine what is used. Crested wheatgrass, not a native species, is currently a typical choice for planting on CERCLA remediated sites. Factors in the choice of revegetation species include the availability of seed and the need for post-planting care.

3.2.5.1 Environmental Monitoring

40. Describe environmental monitoring more fully. [F10-10, N3-10]

Response: Environmental monitoring is the sampling of soil, air, water, plants, or animals to detect changing conditions at a site that may require further evaluation. Environmental monitoring would continue for a least 100 years after the site is remediated if contamination remains at the site. For the seven sites to be remediated under this ROD, environmental monitoring would only be required at the Disposal Pond (TSF-07), and the Burn Pits (TSF-03 and WRRTF-0 1).

Environmental monitoring under the CERCLA process may consist of the collection and analysis of air, soil, plants and other media from a site. Air monitoring may include the use of high- and low volume air samplers to determine whether fugitive radionuclides escape sites where contaminated surface soils exist. Soil monitoring may include radiation surveys over

and around sites where contaminated soil and debris are left in place to evaluate whether radionuclides are mobilized to the surface.

The specific types of environmental monitoring conducted at TAN sites where contamination remains in place or residual contamination may remain after treatment or removal actions will be determined during the remedial design phase.

3.2.5.2 Institutional Controls

41. Please describe in more detail the nature of institutional controls. How they are integrated with other elements of a remedial action? If they will be the only measure in 100 years, why can't they be considered as the only remedy now? [F5-4, F10-9, N3-10]

Response: Institutional controls are ongoing actions to minimize potential threats to human health and the environment. Institutional controls include legal access restrictions, such as deed restrictions, and physical access restrictions, such as fencing, signs, physical structures such as embankments, and security measures. Deed restrictions, which limit the available use of and activities that can be performed at a given site, prevent the completion of exposure pathways that would result in an unacceptable risk to human health. Physical access restrictions limit exposure to contaminants in soil and are effective for contamination that is not likely to become airborne.

Institutional controls have relatively low annual costs and can be an effective component of a CERCLA response, especially as a supplement to engineering controls. Institutional controls are not substituted for active response measures (i.e., treatment or removal) as the sole remedy unless such active measures are determined not to be practicable during the evaluation of alternatives. At any site where the remedial measure leaves contamination in place at levels that could potentially pose a risk to human health, institutional controls would be implemented to maintain protectiveness. Site reviews every 5 years would evaluate the effectiveness of the institutional controls. Permanent markers will be installed at any site at which radioactive contamination is left in place.

Institutional controls would be maintained while the responsible authority is in control of the site, which at INEEL will be a minimum of 100 years following site closure. The institutional control period is the term referring to this duration of site responsibility. At TAN, the 100-year institutional control period is assumed to begin in 1999 and end in 2099. Part 11, Section 12, of this ROD provides more details on institutional controls for WAG 1 sites.

3.2.6 Evaluation of Alternatives

42. The role of the CERCLA criteria in selecting the preferred alternative is not clearly stated in general, or for specific sites. [F5-3, N5-3]

Response: CERCLA guidance requires that remedial alternatives be compared according to nine evaluation criteria. The criteria are grouped in three categories: (1) threshold criteria that relate directly to statutory findings and must be satisfied by each chosen alternative, (2) balancing criteria used to refine the selection of candidate alternatives for the site by evaluating their effectiveness, implementability, and cost, and (3) modifying criteria that measure the acceptability of the alternatives to state agencies and the community.

The two threshold criteria, which must be satisfied by the selected remedy, are overall protection of human health and the environment, and compliance with ARARs. The five balancing criteria, which are used to refine the selection of the candidate alternatives, are (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost. The comparison of alternatives on the cost criterion is specifically made in terms of cost-effectiveness, that is, the cost of the remedy relative to its overall effectiveness as measured by the first three balancing criteria. An alternative satisfies this criterion best if its costs are proportional to its overall effectiveness. The modifying criteria, state and community acceptance, are used in the final evaluation of remedial alternatives.

43. The No Action alternative must be presented and evaluated for each site, and isn't. [F6- 1]

Response: The No Action alternative must be developed for each site during the feasibility study to comply with requirements of the NCP, as described in CERCLA regulations section 40 CFR 300.430(e)(6) and EPA's guidance for conducting remedial investigations and feasibility studies under CERCLA (EPA/540/G-89/004). (If some removal or remedial action has already occurred at the site, the No Action alternative is actually a No Further Action alternative.) Under the No Action alternative, existing management practices at a release site would be continued. The No Action alternative provides a baseline against which other alternatives can be compared during the evaluation of all alternatives against the CERCLA criteria. CERCLA evaluation threshold criteria for overall protectiveness and compliance with ARARs may or may not be met by the No Action alternative, depending on the particular characteristics of the release site. If the No Action alternative does not meet the threshold criteria, it is not evaluated further. Only those alternatives that do meet the threshold criteria are considered for selection, and only the alternatives under consideration are required to be presented in the Proposed Plan.

Section 12 of the WAG 1 comprehensive RI/FS provided a detailed analysis of all alternatives for each site requiring remedial action, including the No Action alternative. In the revised Proposed Plan, the No Action alternative was not presented for the V-Tanks (TSF-09 and TSF-18), the PM-2A Tanks (TSF-26), or the Soil Contamination Area South of the Turntable (TSF-06, Area B) sites, because evaluation demonstrated that the No Action alternative failed to meet threshold criteria.

44. One commenter feels that off-site disposal costs have been exaggerated, and consequently, this option may not be correctly ranked. [F8-2, F8-4, F8-6]

Response: Off-site disposal cost estimates take into account the actual cost of previous disposal activities, such as the disposal fee and transportation costs. On-Site estimates consider the cost of design, construction, operation, closure, and, monitoring (i.e., fully loaded cost estimate) of the repository.

Off-site disposal cost estimates for the V-Tanks (TSF-09 and TSF-18) and the PM-2A Tanks (TSF-26) are for disposal of contaminated soils only. Costs for disposal of the type of contamination represented by the tank contents at the assumed off-site facility, Envirocare of Utah, were not available at the time the estimate was generated. The cost estimates, along with assumptions, are contained in Appendix J of the comprehensive RI/FS.

45. One commenter feels that off-site disposal implementability may be incorrectly ranked. It seems to be as easy to implement as other alternatives. [F8-3]

Response: The comparative evaluation of alternatives may show that off-site disposal alternatives are less implementable than on-Site disposal alternatives as a result of several factors, including the need for compliance with interstate transportation regulations, the need for compliance with multiple state criteria, and the activities involved in transport procurement.

46. The ranking of in situ vitrification, which is an alternative developed for the V-Tanks (TSF-09 and TSF- 18) and the PM-2A Tanks (TSF-26), is questioned on several grounds: cost, uncertain effectiveness, and unproven implementability. [F8-5]

Response: The effectiveness and implementability of the planar type of in situ vitrification (planar ISV) was evaluated in a 1998 treatability study. The results of that study support the ranking of planar ISV as shown in the November 1998 Proposed Plan. The ISV technology typically is less costly than multiple technologies required for in situ treatment of mixtures of organic and heavy metal contaminants such as exist in these tank sites. However, the treatability study also identified additional costs that were not included in the cost estimate prepared for the comprehensive RI/FS or presented in the Proposed Plan. As a result, the cost for Alternative 4 - In Situ Vitrification for the V-Tanks sites increased by 50%, lowering its relative ranking due to this decrease in cost-effectiveness.

At the same time, several new options became available for Alternative 2 – Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal. When the V-Tanks alternatives were originally developed, reasonable options entailing removal and off-site treatment and disposal were not available for the tank wastes. Facilities either did not exist or did not have permits to dispose of mixed waste similar to those in the V-Tanks. Two commercial facilities are now available, making this an implementable alternative that will comply with ARARs.

The V-Tanks alternatives were reevaluated to factor in the new inforination on the ISV cost and the off-site treatment options. The new variation of Alternative 2 would have high implementability and greater cost-effectiveness than Alternative 4. Based on the reevaluation, Alternative 2 was selected as the remedy for the V-Tanks. Additional details on the reevaluation of alternatives for the V-Tanks are in Part II, Section 7.1, of this ROD.

3.3 Release Sites/Groups at WAG 1

3.3.1 V-Tanks (TSF-09 and TSF-18)

3.3.1.1 V-Tanks Description

47. Several comments contended that complete characterization of the V-Tanks contents must be carried out before specific risks can be defined, remedies can be evaluated, and a selection made. What are the actual contaminant contents of the tanks, in terms of listed waste, high mercury content, PCBs, and alpha contamination? Is remediation related to the presence of PCBs and hazardous components in the tanks? Do the tank contents include U-235? Why was U-235 mentioned in the February Proposed Plan, but not in the November revision? Did the concern go away? How can the Agencies carry out a CERCLA action at a site where the risk has not been defined? Why are the tanks being remediated? Even if they leaked, the material would be more than 10 feet below the ground surface and would not threaten the groundwater. [F6-11, F6-13, F6-15, F6-16, F7-17/N1- 17, F7-18/N1-18]

Response: The V-Tank sites require remedial action to address contaminated soils surrounding the tanks. The tanks themselves are partially filled with liquids and sludges contaminated with metals, radionuclides, and organic materials. The contamination in the surrounding soils originated during transfer of wastes to and from the tanks. The contamination in the tanks is known from process knowledge and sampling to include metals (barium, cadmium, chromium, lead, mercury, and silver), volatile organic compounds (trichloroethene, 1,1,1-trichloroethane, carbon tetrachloride, and acetone), semi-volatile organic compounds (PCBs and Stoddard solvent), and radionuclides (cesium-137, cobalt-60, strontium-90, and various isotopes of plutonium and uranium).

The uranium-235 in the tank contents was further. evaluated after the publication of the February 1998 Proposed Plan. It was determined that the quantities of uranium-235 that are present are not sufficient to pose a risk of criticality and do not require specific remediation. Results of this evaluation could have been described in the revised Proposed Plan. The study is available in the Administrative Record in *OPE-ER-98, Katie Haiti to JVayne Pierre, ER4, and Dean Nygard, IDHW*. Further evaluations will be performed during the remedial design phase to verify that the selected remedy will not result in a criticality concern.

Since the tanks have not leaked, they are not a past release and, therefore, were not eligible for calculation of risk in the OU 1-10 baseline risk assessment. The tank contents were included in the feasibility study by agreement among the Agencies. Sufficient information on the tank contents was available to establish the potential risk and to evaluate remedial action alternatives for the contents. Remediation of the site would be much more difficult if it is deferred until after a release has occurred. It is more cost-effective to treat the tank contents before they have leaked and at the same time as the surrounding soils, which must be remediated at this time. Timeliness and greater efficiency will be achieved by treating the tank contents now, in situ, rather than deferring action until after a release has occurred. It is true that the depth of the V-Tanks might preclude there being any exposure pathway. Good management practice, however, would not leave these constituents in place.

3.3.1.2 *V-Tanks Alternatives*

48. Would an ARAR waiver for the V-Tank contents be more cost-effective than treatment? Are the Agencies against obtaining an ARAR waiver? If so, they must define more clearly what the remediation requirements are for the radionuclide-contaminated soils at this site, as well as for the tank contents. [F6-16]

    Response: The Agencies are not in favor of requesting an ARAR waiver for this site. ARAR waivers must meet certain specific requirements, and concurrence for ARAR waivers must be obtained from the State. State concurrence is not anticipated for this site. It is anticipated that the selected remedy for the V-Tanks sites - Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal - will address the principal risks posed by the V-Tanks by removing the source of contamination and thus breaking the pathway by which a future receptor may be exposed. Specific remediation goals for contaminated media at this site will be specified in the remedial design.

49. Why weren't alternatives considered that treat or destroy organics (such as biogradation or dechlorination alternatives)? The comment notes that General Electric has carried out work on biodegradation of PCBs. [F6-17, F9-5]

Response: Individual treatment of PCBs would have very low feasibility and cost effectiveness at this site. Biodegradation or dechlorination would treat the volatile organic compounds ("organics"), including PCBs. However, additional treatment for the metals and radionuclides would be required. Considerations of treatment effectiveness and cost-effectiveness required development of remedial alternatives for this site that would treat all contaminants simultaneously during one action. Pretreatment of some contaminants (such as PCBs) can reduce the effectiveness of subsequent treatments for other contaminants.

50. The contaminants of concern (COCS) and risks at the PM-2A tanks are described as being very similar to those at the V-Tanks. Why are the preferred alternatives different? Would it be possible to absorb the liquid in the PM-2A tanks (as was done with the V-Tanks) and then use the industrial vacuum (This question may have unintentionally switched the names of the tank sites)? [F-6-14, N5-8, N5-10]

    Response: The COCs it these two sites are similar, The PM-2A Tanks are 5 times larger than the V-Tanks. The PM-2A Tanks contain a few inches of sludge and essentially no liquid, while the V-Tanks contain mostly liquid with very little sludge. Because of these differences, similar alternatives could be developed but evaluation resulted in strong differences in their overall implementability.

    In situ vitrification (ISV) has now been demonstrated in a 1998 treatability study to be feasible for tanks up to the size of the V-Tanks (10,000 gal). However, the PM-2A Tanks are 50,000 gal and the implementability is uncertain.

    The PM-2A Tanks selected remedy does, in fact, use an industrial vacuum on liquid absorbed into diatomaceous earth. It seems likely that the original comment (N5-10) was intended to question whether the vacuum technology developed for the PM-2A Tanks could also be used on the V-Tanks. The vacuum removal alternative was developed for the PM-2A Tanks specifically to deal with the removal problems cause d by the absence of liquid in the tank contents. It is a vacuum excavation technology in which a high-velocity air stream penetrates, expands, and breaks up the solids and sludges, which are then captured by a high-powered vacuum air stream. The revised Proposed Plan did not clarify that the alternative involves airjet excavation before vacuum removal of the sludge.

    Alternatives involving vacuum extraction or stabilization were developed for the V-Tanks, but were ranked lower than the selected remedy because of problems with implementability or effectiveness. Detailed descriptions of the alternatives developed for these two sites and their evaluations are in the comprehensive RI/FS and the Feasibility Study Supplement.

51. Several comments object to selection of a remedy before the required treatability studies are performed. One comment notes specifically that the February Proposed Plan stated that further evaluation of the U-235 contamination was required, and asks what kind of evaluation this will be, why it has not taken place, and how it could affect the preferred alternative. Another comment asks why the November Proposed Plan no longer discusses this contaminant and its planned evaluation. A commenting group notes that the February Proposed Plan's admission that the treatability study had not been completed implied little assurance that ISV can work. [F7-34, F7-38, F9-2, N1-22]

    Response: Two treatability studies were performed to evaluate the feasibility and effectiveness of alternatives for the V-Tanks that involved in situ vitrification or in situ stabilization (grouting) and treatment of tank contents. The treatability study for in situ

stabilization (grouting) is described in *Final Report, Treatability Study for LMITCO TSF-09 V-1, V-2, and V-3 Tank Waste*, September 1998 (INEEL/EXT-98-00739). Analytical results on waste drawn from the V-Tanks showed that three grouting mixes met the criteria for a suitable stabilization solidification option. Pretreatment of trichloroethene, tetrachloroethene, and PCBs was also tested. The study demonstrated that two of the grouting mixes could successfully be used following pretreatment to destroy the organic contaminants.

The treatability study for in situ vitrification (ISV) is described in Treatability Study for Planar *In Situ Vitrification of INEEL Test Area North V- Tanks*, October 1998 (INEEL/EXT-98-00854). The technology that was tested is a modification called planar B, which melts from the sides of the tank inward toward the center (instead of top downward as in the original ISV technology). The treatability study showed that planar ISV could safely and effectively remediate the V-Tanks sites.

The CERCLA process provides for general analysis of alternatives as part of the RI/FS process. Data collection efforts and treatability studies are required to the extent necessary to select a remedy. Studies to develop specific details of design are not intended to be carried out until the remedy is actually selected in the ROD, to avoid delays in the RI/FS process, and for best allocation of resources.

The uranium-235 in the tank contents was further evaluated after the publication of the February 1998 Proposed Plan. It was determined that the quantities of uranium-235 that are present are not sufficient to pose a risk of criticality and do not require specific remediation. Results of this evaluation could have been described in the revised Proposed Plan. The study is available in the Administrative Record in *OPE-ER-98, Katie Haiti to Wayne Pierre, EPA, and Dean Nygard, IDHW*. Further evaluations will be performed during the remedial design phase to verify that the selected remedy will not result in a criticality concern.

52. Several commenters expressed a preference for alternatives other than ISV, citing effectiveness, feasibility, and cost as reasons. Several stated that selection of Alternative 4 - In Situ Vitrification in the February Proposed Plan was not supported by the comparative rankings of alternatives presented, nor by the information given on the evaluation and selection process. One commenter found Alternative 3 - Soil Excavation, In Situ Treatment of Tank Contents, and Soil Disposal unacceptable as well as Alternative 4. [F6-12, F9-1, F9-2, F12-9, N1-14, N2-1]

Response: A treatability study of planar ISV, a technological improvement over conventional ISV, was carried out in 1998 for the V-Tanks. The report on this study, *Treatability Study for Planar In Situ Vitrification of INEEL Test Area North V- Tanks*, October 1998 (INEEL/EXT-98-00854), is available in the Administrative Record. The results of the study demonstrated that planar ISV could be readily implemented and would have high effectiveness on the contamination present in and surrounding the V-Tanks. The study's results fully support the ranking of ISV as shown in the November 1998 revised Proposed Plan. A discussion of the study and its results could have been included in the plan. The ISV technology typically is less costly than the multiple technologies required for in situ treatment of mixtures of organic and heavy metal contaminants such as exist in these tank sites.

However, the treatability study also identified additional costs that were not included in cost estimate prepared for the comprehensive RI/FS or presented to the Proposed Plan. As a result, the Alternative 4 – In Situ Vitrification cost for the V-Tanks sites increased by 50%, lowering its relative ranking due to this decrease in cost-effectiveness.

At the same time, several new options became available for Alternative 2 – Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal. When the V-Tanks alternatives were originally developed, reasonable options entailing removal and off-site treatment and disposal were not available for the tank wastes. Facilities either did not exist or did not have permits to dispose of mixed wastes similar to those in the V-Tanks. Two commercial facilities are now available, making this an implementable alternative that will comply with ARARs.

53. The V-Tanks alternatives were reevaluated to factor in the new information on the ISV cost and the off-site treatment options. The new variation of Alternative 2 would have high implementability and greater cost-effectiveness than Alternative 4. Based on the re-evaluation, Alternative 2 was selected as the remedy for the V-Tanks. Additional details on the reevaluation of alternatives for the V-Tanks are in Part II, Section 7.1, of this ROD. Two comments supported Alternative 4 - In Situ Vitrification. Many comments asked questions about how ISV could be successfully implemented. Are the Agencies aware of ISV's reliability problems and accident potential? What is the plan to prevent these? What are the plans for double containment and other protection of workers? Should the selection of ISV be termed a technology demonstration? How does ISV reduce risk from the soil pathway, when it does not remove the soil? [F6-13, F6-18, F9-4, N1-13, N1-15, N1-16, N3-12, N5-9, N6-5, T1-2]

Response: The ISV technology that was tested is a modification called planar ISV. It is described in the *Treatability Studyfor Planar In Situ Vitrification of INEEL Test Area North V-tanks,* October 1998 (INEEL/EXT-98-00854). Planar ISV is.an enhancement of conventional ISV technology that resolves problems that have occurred using conventional ISV. By treating the contamination matrix from the ground surface down, conventional ISV can trap volatile materials below the melt resulting in pressure buildup that can cause displacement of material from the melt pool, overheating of the off-gas treatment system and process upsets. Planar ISV resolves these issues by positioning the melt planes to the sides of the contamination area, allowing the melt to proceed from the sides inward toward the center so the vapors can vent upward and be effectively and safely removed. Reliability problems and process upsets are not anticipated for planar ISV.

Planar ISV could simultaneously treat, in situ, the radioactive and chemically hazardous materials in the V-Tanks (including the PCBs) and the contaminated soil surrounding the tanks. A full-scale demonstration to meet Toxic Substances Control Act (TSCA) requirements was performed at the Apparatus Service Center Superfund Site in Spokane, Washington, to treat PCBs. All objectives were met and an EPA TSCA permit was issued in October 1995. A large-scale remediation was successfully performed on dioxin and other organic wastes from the Wasatch Chemical Superfund Site in Salt Lake City, Utah. At both sites, treatment efficiency of over 99.99% was demonstrated. The planar ISV system has been accepted for use on four Superfund projects to date. These previous demonstrations and the treatability study show that planar ISV could be expected to successfully treat the V-Tank contents and surrounding contaminated soil to achieve final remediation goals.

For the V-Tanks treatability study, two tests were performed. The first test, using soil from the TAN site, demonstrated that planar ISV can develop a melt of sufficient scale and configuration to process the 10,000-gal V-Tanks. The second test was performed on a 4,500-gal scaled-down version of a V-Tank containing simulated sludge and liquids, including a non-radioactive cesium compound. The volatile materials present in the actual V-Tanks were also simulated. The remaining void space in the tank was filled with soil. A post-test evaluation showed that the melts developed symmetrically with no pressurebuild-up generated

within the tank. The tank was successfully treated with no process upsets. Evaluation of the pre- and post-test chemical sampling data indicated that, despite its relatively remote placement in the bottom of the tank, the cesium was essentially uniformly dispersed and 99.97% of the cesium was retained in the vitrified block. Volatile compounds in the soil were also remediated. The minor quantities of debris (rocks, wire, plastic, and wood) that were processed during the test had no observable effect on the ISV process. Although organics were not present in the treatability test, it has been successfully demonstrated previously that ISV results in the effective destruction of organic contaminants while ensuring full compliance with air emission requirements. The vitrified block was excavated, fractured, and sampled to verify effectiveness. The concentration of cesium, lithium, and molybdenum tracer materials were shown to be essentially uniform throughout the monolith.

However, the treatability study also identified additional costs that were not included in the cost estimate prepared for the comprehensive RI/FS or presented in the Proposed Plan. As a result, the Alternative 4 - In Situ Vitrification cost for the V-Tanks sites increased by 50%, lowering its relative ranking due to this decrease in cost-effectiveness.

At the same time, two commercial facilities became available for ex situ treatment of the tank contents, increasing the implementability of Alternative 2 - Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal. The facilities are permitted to dispose of mixed wastes similar to those in the V-Tanks. The V-Tanks alternatives were reevaluated to factor in this new information on the ISV cost and the off-site treatment availability. Because the new variation of Alternative 2 would have equally high long-term effectiveness and implementability and greater cost-effectiveness compared to Alternative 4, Alternative 2 was selected as the remedy for the V-Tanks. Additional details on the reevaluation of alternatives for the V-Tanks are in Part II, Section 7.1, of this ROD.

54. Many questions were asked about how the ISV results would be compliant with ARARs. How will ARARs requiring destruction of PCBs, treatment-of mercury, and treatment for other constituent wastes be met? How will the melt be characterized to verify uniforinity and treatment effectiveness? Will the melt satisfy land disposal restrictions (LDRs)? [F7-26/N1-20, F7-33, F7-35/N1-23, F7-36, N1-19, N1-21, N1-24, N3-11, N3-13, N3-14, N3-15]

Response: The Agencies would enforce all applicable ARARs, including LDRs, as identified in Part II of this ROD. Verification %chniques would be described in the remedial design. The selected remedy for the V-Tanks was changed to Alternative 2 - Soil and Tank Removal, Ex Situ Treatment of Tank Contents, and Disposal during a reevaluation of alternatives for this site, triggered by an increase in the estimated cost for the ISV alternative, and the new availability of off-site commercial treatment facilities permitted to handle mixed wastes similar to those in the V-Tanks.

3.3.2 PM-2A Tanks (TSF-26)

3.3.2.1 PM-2A Tanks Description

55. The PM-2A Tanks site characterization is incomplete. Please describe (1) the extensive soil removal from the tank area in the mid- 1980s, and (2) the extent of analytical data on tank contents. How can risk be assessed and remediation decisions made, given the lack of data on contents of both tanks? [F7-19/N1-25]

Response: The PM-2A Tank system was shut down in 1975 after 20 years of use because of operational difficulties and spillage. Subsequent removal actions have been summarized in the 1995 OU 10-06 Removal Action documentation. It is unclear which removal action the comment refers to. Removals actions include (1) removal of most of the liquids in the late 1970s; (2) dismantlement and deactivation of the above,ground and underground hardware and piping in 1981 and 1982; (3) removal of remaining liquids from the tanks and partial filling with diatomaceous earth to dry the sludges in 1981; (4) removal of 6 in. of top soil from a 75- by 150-foot area northeast of the tanks in the mid- to late-1980s; and (5) a non–time critical removal action in 1995.

The PM-2A Tanks sites require remedial action to address contaminated soils surrounding the tanks. The contamination in the surrounding soils originated during transfer of wastes to and from the tanks and during removal of liquids after operations ended. The tanks themselves contain only a few inches of contaminated sludge. When the tanks were emptied, only an inch of liquid remained in the bottom of each, to which diatomaceous earth was added as an absorbent. The contamination in the sludge is known from process knowledge and sampling to include metals (barium, cadmium, chromium, lead, mercury, and silver), organic materials (including PCBs), and radionuclides (cesium-137, cobalt-60, strontium-90, and various isotopes of plutonium and uranium).

Since the tanks have not leaked, they are not a past release and, therefore, were not eligible for calculation of risk in the OU 1-10 baseline risk assessment. The tank contents were included in the feasibility study by agreement among the Agencies. Sufficient information on the tank contents was available to establish the potential risk and to evaluate remedial action alternatives for the contents. Remediation of the site would be much more difficult if it is deferred until after a release has occurred. It is more cost-effective to treat the tank contents before they have leaked and at the same time as the surrounding soils, which must be rem,ediated at this time. Timeliness and greater efficiency will be achieved by treating the tank contents now, rather than deferring action until after a release has occurred.

3.3.2.2 PM-2A Tanks Alternatives

56. The PM-2A Tanks preferred alternative (Alternative 3d – Soil Excavation, Tank Content Vacuum Removal, Treatment, and Disposal) received some support. Another commenter supported Alternative 3 in general, for reasons of feasibility. [N2-2, N6-6, T1-2]

    Response: Alternative 3d is preferred because it would use a proven technology to achieve long-term effectiveness through removal of contaminants. The decontaminated tanks would not need to be removed. The cost-effectiveness is very high relative to other alternatives.

57. The contaminants of concern (COCs) and risks at the PM-2A tanks are described as being very similar to those at the V-Tanks. Why are the preferred alternatives different? Would it be possible to absorb the liquid in the PM-2A tanks (as was done with the V-Tanks) and then use the industrial vacuum? [F6-14, N5-8, N5-10]

    Response: The COCs at these two sites are similar. The PM-2A Tanks are 5 times larger than the V-Tanks. The PM-2A Tanks contain a few inches of sludge and essentially no liquid, while the V-Tanks contain mostly liquid with very little sludge. Because of these differences, similar alternatives could be developed, but evaluation resulted in strong differences in their overall implementability.

In situ vitrification (ISV) has now been demonstrated in a 1998 treatability study to be feasible for tanks up to the size of the V-Tanks (10,000 gal). However, the PM-2A Tanks are 50,000 gal and the implementability is uncertain.

The PM-2A Tanks selected remedy does, in fact, use an industrial vacuum to remove the waste. It seems likely that the original comment (N5-10) was intended to question whether the vacuum technology developed for the PM-2A Tanks could also be used on the V-Tanks. The vacuum removal alternative was developed for the PM-2A Tanks specifically to deal with the removal problems caused by the absence of liquid in the tank contents. It is a vacuum excavation technology in which a high-velocity air stream penetrates, expands, and breaks up the solids and sludges, which are then captured by a high-powered vacuum air stream. The revised Proposed Plan did not clarify that the alternative involves air-jet excavation before vacuum removal of the sludge.

Alternatives involving vacuum extraction or stabilization were developed for the V-Tanks, but were ranked lower than the selected remedy because of problems with implementability or effectiveness. Detailed descriptions of the alternatives developed for these two sites and their evaluations are in the comprehensive RI/FS and the Feasibility Study Supplement.

58. Many questions about the PM-2A Tanks preferred alternative's implementation and compliance with ARARs were received. What is the difference between stabilization and treatment? Is this a new distinction for INEEL? How does it apply to past INEEL stabilization actions? What decontamination, grouting, and other treatment will be required after the tanks are emptied? Won't the vacuum obviate treatment? Why not vitrify and store the waste until it can be disposed of in a permanent geologic repository? How will soil and tank content disposal meet ARARs, especially RCRA requirements for hazardous landfills left in place and land disposal restrictions (LDRs)? [F7-39, F7-41, F7-43, N1-27, N1-28, N3-8, N3-14, N5-10]

Response. Treatment is any component of an alternative that reduces the toxicity, mobility, or volume of the hazardous substances, pollutants, or contaminants through destruction or alteration. Stabilization, by decreasing the mobility of hazardous substances, is a form of treatment. Proposed Plan wording may have incorrectly implied that stabilization is not a form of treatment.

Decontamination and other treatment as required to meet ARARs will be developed during the remedial design. Grouting, as a method of treatment or stabilization, will not be a part of the selected remedy.

Given the uncertain schedule for opening of a pen-nanent geologic repository and the difficulty in estimating storage and disposal costs, vitrification and temporary storage of the waste would have very low cost-effectiveness. Moreover, it would likely not be able to be implemented within a reasonable time.

All applicable ARARs, as identified in Part II of this ROD, will be enforced by the Agencies. Verification techniques will be described in the remedial design. Satisfaction of LDRS, as required, will be enforced by the Agencies.

3.3.3 Soil Contamination Area South of the Turntable (TSF-06, Area B)

3.3.3.1 Soil Contamination Area South of the Turntable Description

59. Describe more fully the "previous removal actions" at this site. Are they the 1996 "Dirt Train to Hell"? [N5-11]

    Response: A non-time critical removal action was erformed in 1995 under Operable Unit 10-06, which removed a total of 2,092 m^3 (2,737 yd^3) from an area of 180 by 90 m (600 by 300 ft). The average soil removal depth was 19 cm (7.5 in.) and the maximum depth removed was 45.7 cm (18 in.).

3.3.3.2 Soil Contamination Area South of the Turntable Alternatives

60. Support for the preferred alternative (Alternative 3a – Excavation and On-Site Disposal) was expressed in several comments, including one that endorsed Alternative 3 in general for technical reasons and another noted the needs for cost-efficiency and future land usability. [N2-3, N6-7, T1-2]

    Response: This readily implemented alternative results in high long-term effectiveness by removing contaminated soil and consolidating it in a managed repository.

61. Is the preferred alternative compliant with ARARs? A commenter specifically noted that the Idaho Air Toxic Air Pollutants, for radionuclides, and federal NESHAPs, for radionuclide emissions, were not listed as ARARS. [N1-29]

    Response: All applicable ARARs, as identified in Part 11 of this ROD, will be enforced by the Agencies.

3.3.4 Disposal Pond (TSF-07)

3.3.4.1 Disposal Pond Description

62. Several commenters requested more information on radium-226 at the TAN Disposal Pond. What are the radium-226 levels? Are they in fact below background? One comment noted that the selection between Alternative I and Alternative 3a depends on this information, which was considered inadequate in the February Proposed Plan. The November plan showed that additional investigations were conducted to fill the data gap, and one commenting group agreed with the conclusion presented there that the radium-226 level does not require remediation. [F7-23, F7-27, F12-8, N7-7]

    Response: Radium-226 does not require remediation at the TAN Disposal Pond (TSF-07). The February 1998 Proposed Plan listed radium-226 as one of the COCS at the Disposal Pond. Following the release of the first Proposed Plan in February 1998, further investigation of the radium-226 concentrations at the Disposal Pond determined that it is present at levels that are below naturally occurring background levels established for the INEEL. The CERCLA process does not require cleanup to below naturally occurring levels. The revised Proposed Plan issued in November 1999 reflected this expanded knowledge. Detailed information can be found in the Administrative Record in the *TAN TSF-07 Pond Radium-226 Concentrations*

and Corrections report (LMITCO Engineering Design File ER-WAG 1-08, INEEL/EXT-98-0505, June 1998).

63. A comment asks why the same description fails to mention the removal action, called a "best management practice," conducted in the early 1990s that removed and grouted sediments from the pond inlet. Is the risk estimate based on the pond sampling conducted several years ago? Do risk estimates take into account continuing discharges after the date of pond sampling? Are metal concentrations in pond sediments still below risk levels? Has the Disposal Pond received purge water containing RCRA-listed wastes from surrounding wells that has contaminated the pond sediments? How will the Agencies address this issue? [F7-8/N1-32,N1-31]

    Response: The Agencies are not aware of any previous removal actions at this site. Surface water, sediments, subsurface soil, and perched water associated with the pond were sampled from 1982 to 1991. These sample data, together with process knowledge regarding the wastewater disposed of in the pond, were considered adequate to characterize contaminants at this site. Concentrations of radionuclides, metals, and organic materials within the soils of the inactive area of the pond were assessed; cesium-137 was determined to be the only contaminant posing a risk to human health and the environment that requires remediation. Current discharges into a separate 2.5-acre area within the disposal pond (the "active" portion of the pond) consist of sanitary and industrial waste and are made under a State of Idaho permit for Land Application of Wastewater. Because the disposal pond received waste listed under RCRA, additional samples will be collected as part of implementation of this ROD to provide data to support a no-longer-contained-in determination for this site. The comprehensive RI/FS concluded that metals, organic materials, and radionuclides other than cesium-137 were not present at levels sufficient to pose risks to human health or the environment.

64. Is the Disposal Pond a CERCLA site or a co-located facility? [F7-8]

    Response: The pond is considered a co-located facility. It receives treated sewage, boiler blowdown, and process.wastewater under a State of Idaho permit for Land Application of Wastewater. A 5-acre portion of the TSF-07 Disposal Pond is contaminated by cesium-137 at levels posing a risk to human health and the environment that require remediation. Within the 5-acre portion, partitioned areas totaling 2.5 acres are still active, receiving sanitan, and industrial wastewater under a State of Idaho permit for Land Application of Wastewater. The 2.5-acre area is a co-located facility and will be evaluated further when use is discontinued. The inactive area is being addressed as a CERCLA site under this ROD. The use of the same site number for both the inactive (CERCLA) and active (co-located) portions of the TSF-07 Disposal Pond is admittedly confusing.

3.3.4.2 Disposal Pond Alternatives

65. Community acceptance of the preferred alternative. Alternative 1 – Limited Action, was mixed. Two commenters who supported the preference for Alternative 1, stated that from cost or technical viewpoints, it appears to be the most practical. Another comment expresses a preference for Alternative 2b – Containment xith an Engineered Barrier, as preferable to the "do nothing" Agency selected. A third comment expressed dislike for both Alternative 1 – Limited Action and Alternative 3 – Excavation and Disposal, finding it disadvantageous that they leave risk remaining into the future, requiring continued and extensive monitoring. [F8-1. N2-4, N6-8, T1-2]

Response: Alternative 1 – Limited Action will effectively protect human health and the environment from the risk posed by cesium-137 while allowing the active portions within the release site to continue operating. The cesium-137 (half-life of 30 years) will be attenuated through decay to below acceptable levels within the 100-year institutional control period.

66. What ARARs will Alternative 1 – Limited Action comply with? The comment suggests that they should be enumerated so the public can clearly see what the Agencies will comply with. [N1-33]

    Response: All applicable ARARs, as identified in Part 11 of this ROD, will be enforced by the Agencies.

67. How will the preferred alternative (Alternative 1 – Limited Action) address ecological risk at this site? Table I in the Proposed Plan indicates that the contamination in the Disposal Pond poses a hazard index of >1 to ecological receptors. The preferred alternative, Limited Action, does not address ecological risk, however. The commenting group's understanding is that ecological risks of >1 do not necessarily warrant remedial action and that at some point, remedial action is required to address ecological risks. The INEEL Citizens Advisory Board recommends that the WAG 1 ROD describe how the Limited Action alternative will address ecological risk at the Disposal Pond for the next 100 years. [N7-8]

    Response: This site will be evaluated in the site-wide ecological risk assessment under Waste Area Group 10.

68. Why are operations and maintenance (O&M) costs for Alternative 2b – Containment with an Engineered Barrier so much higher than for Alternative 1 – Limited Action? [F12-3]

    Response: The O&M costs for containment include all monitoring and review costs associated with Alternative 1 plus the costs of monitoring against subsidence, water infiltration, contour alterations, and other changes in protectiveness of the cover over time, which are actions not required under Alternative 1.

3.3.5 Burn Pits (TSF-03 And WRRTF-01)

3.3.5.1 Burn Pits Description

69. The characterization of the site may be incomplete. A commenter on both the February and November Proposed Plans believes the comprehensive RI/FS indicates that the possible presence of PCBs, dioxins, and furans was not investigated, which seems an oversight given that waste oils were burned during a time when PCBs were found in many oil products. The commenter contends that the Proposed Plan cannot be presented without a complete risk profile, which requires sampling for these contaminants. The same commenter asks, what are the expected concentrations, and related risk values, for the beryllium, chlorinated solvents, and products of incomplete combustion in these pits? [F7-11, F7-13, N1-34, N1-36, N1-38]

    Response: Activities at these sites very likely included the burning of used petroleum products and solvents. Therefore, a potential for PCB contamination exists. In addition, open burning of petroleum products and chlorinated chemicals could result in the production of dioxins/furans. Recent investigation into available records also indicates that other toxic substances, such as beryllium, chlorinated solvents, and used oils were disposed of in the pits.

Further contaminants may include pesticides and additional metals. Previous sampling did not identify these possible contaminants.

Pursuant to 40 CFR 300.430(a)(2), the RI/FS is to assess site conditions and evaluate alternatives to the extent necessary to select a remedy. The scope and timing of data collection, risk assessment, treatability studies, and analysis of alternatives, among other activities, should be tailored to the nature and complexity of the problems. Sampling and analysis shall obtain data of sufficient quality and quantity as necessary to achieve adequate data for use in selecting an appropriate remedy.

The selected remedy for the Bum Pits, Alternative 2, will used sampling and analysis to assess the sites for additional COCs that may not have been properly evaluated during the RI. If the sample analyses indicate that additional contaminants are present, and a cover can not be designed cost effectively to be protective based on the presence of these contaminants, and it is more cost effective to excavate and dispose of the waste, then this will be the selected alternative.

3.3.5.2 Burn Pits Alternatives

70. Support for the February Proposed Plan preferred alternative of Limited Action was mixed. One commenter who concurred with its selection did so on the basis of its low cost, and stated that even that cost was too much for the marker placement and caretaking costs described. No Action, the commenter concluded, would be even better, because that would be even cheaper at sites that the commenter feels warrant no remediation. Limited Action was found unacceptaole by another commenter, however, because it was felt not to address the unknown risk from PCBs, dioxins, and furans, and would not address the risk to future residents from lead, which would remain the same in 100 years as at present. [F6-2, F7-10, F7-12, F7-28, T1-2]

    Response: The Limited Action alternative would rely on an existing soil cover, which in some places at the Bum Pits is less than 6 in. thick. Over the 100-year control period, the cover could be breached by wind erosion, resulting in potential contaminant transport by surface water and as fugitive dust. The reevaluation of the alternatives for the Bum Pits in response to public comment led to development of a new alternative and re ection of the previously preferred alternative.

71. Community acceptance of the preferred alternative selected in the revised Proposed Plan (Alternative 2 – Containment with Native Soil Cover) was low, with more commenters rejecting it than finding it acceptable. One comment calls it the “most practical” from a technical viewpoint, but said the cost “seems excessive.” The comments that reject the containment alternative raise concerns about its ranking, its effectiveness, and its cost, but reject it primarily because it does not treat or remove contamination, and strongly favor Alternative 3b – Excavation and On-Site Disposal as “more effective at the Same cost.” The information presented in the revised Proposed Plan showed Alternative 3b – Excavation and On-Site Disposal ranking higher than the preferred alternative in long-term effectiveness and reduction of toxicity, mobility, or volume, and equaling it in all other criteria and in cost. A commenting group stated that it does not support selection of the preferred containment alternative unless cost is revised to be lower than the removal alternative. A commenter who rejected the previous preferred alternative reiterated that the risk from organic contaminants is not addressed. This commenter notes the NCP and 40 CFR 300.430 preference for treatment or removal over containment, and asks why lead will be left in place at an area with real potential for future use by the public? Also, won’t the lead still be available through various

exposure pathways? Given that no INEEL soil cover has been "successful" for more than a decade, a commenting group would like an explanation of the basis for describing soil cover implementability as high. [N1-35, N1-37, N1-39, N2-5, N5-12, N6-9, N7-10]

Response: The Agencies believe that the selection of Alternative 2 – Containment with Native Soil Cover is supported by the analysis of cost-effectiveness, compliance with threshold criteria, and implementability. The remedial design will require sampling and analysis to design the soil cover to ensure that it will be completely protective of human health and the environment. If it were determined that a fully protective cover could not be cost-effective, then one of the Alternative 3 variations (Excavation and On-Site or Off-Site Disposal) would be selected.

72. Please explain the high operation and maintenance (O&M) costs for these sites – are they due to presence of other contaminants of concern besides lead? The appearance of precision in the Plan's cost estimate is misleading – the commenting. group understood from a presentation that the capital cost estimate that it is based on the most costly possible requirement of a 10-foot engineered cover. What is the real range? Shouldn't future Proposed Plans present less precise cost estimates when appropriate? [N7-9]

Response: The O&M costs for containment include all monitoring and review costs associated with Alternative 1 plus the costs of monitoring against subsidence, water infiltration, contour alterations, and other changes in protectiveness of the cover over time, which are actions not required under Alternative 1. Given the persistence of lead contamination, either Alternative 1 or 2 would likely require long-term monitoring and maintenance for the full 100-year period of institutional control. The RD/RA Work Plan will describe the engineered cover thickness requirements, which differ based on the amount of clean soil currently covering each of the Burn Pits. Appendix J of the comprehensive RI/FS provides detailed cost estimate assumptions, including ranges of estimates.

73. The statement in the November Proposed Plan that a variation of Alternative 3 (Excavation and Disposal) might be selected instead of Alternative 2 (Native Soil Cover), based on sampling and analysis, appears to a commenter to be an Agency proposal for a contingent ROD. The commenter believes this should be stated very clearly. As well, the commenter points out that site characterization should -have been performed as part of the Track 2 investigation or the comprehensive RI/FS, and is not to be completed after the ROD. [N1-40]

Response: CERCLA guidance documents acknowledge that there are limited situations in which flexibility may be required to ensure implementation of the most appropriate remedy. One such situation is where two different technologies under consideration appear to offer comparable performance on the basis of the five primary balancing criteria, such that both could be argued to provide the "best balance of tradeoffs." Under such circumstances, the Proposed Plan and ROD may identify one as the selected remedy and specify the criteria whereunder the other remedy would be implemented. The Agencies believe that the selection of Alternative 2 – Containment with Native Soil Cover is supported by the analysis of cost-effectiveness, compliance with threshold criteria, and implementability. The remedial design will require sampling and analysis to design the soil cover to ensure that it will be completely protective of human health and the environment. If it were determined that a fully protective cover could not be cost-effective, then one of the Alternative 3 variations (Excavation and On-Site or Off-Site Disposal) would be selected. This change would be documented in an Explanation of Significant Differences (ESD). The ESD would be placed into the WAG 1

Administrative Record, and the Agencies would provide notice to the public of the change in approach to this site.

3.3.6 Mercury Spill Area (TSF-08)

3.3.6.1 Mercury Spill Area Description

74. The risk descriptions for this site, indicating a total cancer risk to humans from mercury, were incorrectly presented in the February Proposed Plan. [F6-4, F12-5]

    Response: The commenters are correct that mercury does not present a cancer risk to humans. The November Proposed Plan revision clarified this in the table presenting risks.

75. Why doesn't the site description include the mercury found all along the tracks within the TAN area, from the removal action site over to TAN 648? Was the rest of the track contamination considered during the investigation? Why was the mercury not completely removed during the 1995 action? Why should taxpayers pay twice for remediation? [F6-3, F7-9, N1-41]

    Response: All railroad tracks areas were evaluated for possible mercury contamination. The initial cleanup of mercury was performed at the time of each spill in the 1950s and 1960s. Standard procedure at that time was to clean up the visible mercury. During later cleanup actions, mercury was cleaned up to meet goals that were based on soil ingestion risk-based levels. Later, during the comprehensive RI/FS, the site was reevaluated to compare homegrown produce ingestion risk-based concentrations. These levels are much lower than those for soil ingestion, because mercury can bioaccumulate (build up) in the plants. The remaining contamination exceeded those concentrations.

76. How can there be a risk through "ingestion of homegrown produce" from mercury that is more than 4 feet below the ground surface? Garden plant root systems are rarely deeper than 1 or 2 feet. The EPA typically uses a root zone depth of 8 inches to assess risk from homegrown produce. This risk appears to be the result of ultra-conservatism. [F6-4]

    Response: One assumption used in the hypothetical future residential scenario is that a future resident might excavate a basement 10 feet deep or down to the basalt bedrock, whichever is less, and spread the excavated (potentially contaminated) soil around their home. Produce grown in the contaminated soil would then complete the pathway of risk to the future resident. CERCLA guidance require extremely conservative risk assessments to ensure current and future protectiveness to human health and the environment.

3.3.6.2 Mercury Spill Area Alternatives

77. Community acceptance of the preferred alternative identified in the February Proposed Plan, Alternative 3 – Excavation and Off-Site Disposal, was low. One comment rejected it on the basis of low cost-effectiveness for a site with a conservative risk assessment and only a threshold level risk, and suggested that a No Action determination be considered. Another commenter doubted that the entire soil column contaminated with mercury would be addressed. Another commenter asked why the General Electric Mercury Extraction Process (GEMEP) alternative was not being considered to clean the soils instead, and provided details on its current use at a Superfund site. [F6-5, F7-29, F11-l, Tl-2]

Response: Based on low community support for this preferred alternative and concern expressed about treatment of the contamination, the mercury spill area was removed from this ROD. A phytoremediation treatability study will be conducted at the site. Based on the results of the phytoremediation treatability study, a determination will be made as to subsequent action, if required.

78. Community acceptance of the November Proposed Plan alteration in approach to the Mercury Spill, wherein it was removed from this action to be used in a phytoremediation treatability study, was largely positive. A commenting group wrote to "applaud the selection of a preferred alternative that is both innovative and less costly than the other alternatives." Will there be coordination with Argonne National Laboratory-West, which is currently applying this alternative? How will the results of phytoremediation be communicated to the public? If additional remediation is required at this site after phytoremediation, how will public comment be sought? The Shoshone-Bannock Tribes would like to participate in the mercury contamination phytoremediation research. One commenting group had questions on the late addition of this alternative to the Mercury Spill discussion. How was the site chosen as a treatability study for phytoremediation? Why were Po other alternatives discussed? [N1-42, N5-13, N6-11, N7-11]

    Response: The design of the phytoremediation treatability study will include review of all current scientific documentation and ongoing research both in and beyond the DOE complex. Public information and comment opportunities will be carried out as part of the INEEL's public involvement activities. In developing alternatives, CERCLA guidance expresses a preference for the development of innovative treatment technologies if they offer the potential for superior treatment performance or implementability, fewer adverse impacts than other available approaches, or lower costs for similar levels of performance than demonstrated technologies. Phytoremediation is a low-cost remediation option for sites with widely dispersed contamination at low concentrations. The study will determine the rate of uptake of mercury by plants at the INEEL. Based on the results of the phytoremediation treatability study, a determination will be made as to subsequent action, if required.

3.3.7 Fuel Leak (WRRTF-13)

3.3.7.1 Fuel Leak Description

79. Several comments state the characterization of the Diesel Fuel Leak is incomplete in both the February and November Proposed Plan descriptions. Why wasn't the previous tank/soil removal action complete? Was or was not risk calculated in the baseline risk assessment? What is the actual maximum soil total petroleum hydrocarbon (TPH) concentration? Does it in fact show unacceptable future risk? What ,vas the average post-sample TPH concentration? What is the Agencies' unit of concern – one cubic, foot? one cubic yard? 100 cubic yards? If chemical analysis to show compliance with risk-based corrective action (RBCA) standards is not available, then isn't it the case that an action determination cannot be made until a complete risk profile is obtained through sampling? Comments received in February and repeated in November included a request to specify how much contamination was removed in the previous action, and exactly how much remains. Finally, a comment contends that in failing to indicate that this release resulted in gross contamination of the fractured basalt beneath the soil, the comprehensive RI/FS fails to consider this additional groundwater contaminant-pathway and is thus incomplete.[F6-6, F7-14/N1-43, F7-16/N1-45, F7-30/N1-47]

Response: It was previously a common practice at the INEEL to remove as much visible contamination as possible when fixing pipe leaks and carrying out tank removals. During one of the tank removals, some soil could not be removed due to the location of a nearby tank. The various sampling events and the associated analytical results can be found in the Track 2 and comprehensive RI/FS documents.

Because diesel and petroleum products are not found in standard toxicity tables, typical risk assessment cannot be performed. The initial evaluation of the contamination was compared against a current suggested cleanup goal of 1,000 mg/kg. During the period when the RI/FS investigation was being conducted, the Idaho Risk Based Corrective Action (RBCA) standard was issued, and the Agencies agreed to utilize these standards as the required cleanup goals.

Data analysis and modeling, based on assumptions about the quantities leaked, concluded that the spill would not affect groundwater. No definite evidence of these petroleum products reaching the groundwater has ever been shown. Section 6.3.3.4 and Appendixes B and C of the comprehensive RI/FS provide details of the data analysis and modeling used to assess the potential for groundwater contamination from WAG 1 surface and near surface sources.

3.3.7.2 Fuel Leak Alternatives

80. Community acceptance of the preferred alternative presented in the February Proposed Plan (Alternative 2 – Limited Action) was low. Questions about it focused on cost-effectiveness, and showed a preference for removal or treatment. Why is contamination being left in place here instead of being removed? Why is it so costly? Why can't worker exposure during removal be held to a minimum, given that INEEL workers routinely handle petroleum-contaminated soil safely during landfarming at CFA? Another commenter found Limited Action unacceptable because it does not address the large amount of contamination left in place and extending through the vadose zone to the aquifer. [F6-9, F7-31, T1-2]

    Response: Based on comments received from the public, the Fuel Leak alternatives were reevaluated. As described in the Feasibility Study Supplement, an additional alternative, In Situ Biodegradation using Bioventing, was developed based on new information about its cost effectiveness at other petroleum-contaminated sites in the U.S. All alternatives were then reevaluated. The result was the selection of Alternative 4 – Excavation and Land Farming, which would have high long-term effectiveness through removal and treatment, and has the lowest cost of the four alternatives evaluated because it would not require long-term monitoring. The remedial design will specify personal protective equipment and engineering controls that hold worker exposure to contaminants to a minimum. The comprehensive RI/FS determined that contamination at the Fuel Leak site does not threaten the aquifer.

81. Community acceptance of Alternative 4 – Excavation and Land Farming, the Agencies' preferred alternative in the revised Proposed Plan published in November, was higher. However, comments showed that questions remained about its implementation and full effectiveness. Shouldn't any soil removed be subject to a full hazardous waste determination prior to land farming? The same commenter reiterates that the large amount of known contamination extending through the vadose zone to the aquifer is not completely addressed. Another comment asks why serious consideration isn't given to completing remediation for the entire petroleum-contaminated area now. What is now proposed amounts to three phases - the previous removal, the selected partial removal of soil between existing buildings, and a final future removal of soil below buildings after their decommissioning. Wouldn't it cost less to finish the job now? [N1-48, N1-50, N2-6, N6-10]

Response: Sampling will be performed before excavation to determine the volume of soil that must be removed. The samples will also be analyzed to characterize the contamination. The sampling and characterization will be performed as specified in the remedial design. The comprehensive RI/FS determined, that contamination at the Fuel Leak site does not threaten the aquifer. The previous removal was in response to a spill and took as much soil as was thought to be necessary. The adjacent buildings are currently in use and are not scheduled for D&D within a timeframe such that deferring all remediation of the Fuel Leak site would be prudent management practice. An evaluation will be made in the remedial- design to determine the most appropriate time to perform the remediation.

3.4 Other Issues

3.4.1 The Snake River Plain Aquifer/Groundwater

82. Several commenters believe the data indicate that several TAN sites have contaminated the groundwater with organics and radionuclides. One comment cites a demonstration that the regolith is permeable and a breathing effect occurs (IDO-12069), and expresses concern about organic contaminants. Another commenter strongly believes that WRRTF- 13 (the Fuel Leak) has generated gross contamination in the fractured basalt beneath the site's soil, leaching to the aquifer. [F1-2, F7-14, F7-25, F7-31/N1-48, N1-10/N1-46]

    Response: The comprehensive RI/FS determined that contamination at the Fuel Leak site does not threaten the aquifer. The 1995 OU 1-07B ROD for the Technical Support Facility Injection Well determined on the basis of groundwater quality analyses that this well is the source of groundwater contaminants at TAN. The well was last used as a disposal site in 1972. Remediation of the contaminated groundwater plume below TAN is proceeding in accordance with the 1995 ROD. More information on this site is available in the Administrative Record for WAG 1.

83. The proposed placement of TAN waste, particularly waste containing mixed low-level waste and PCBs, into the proposed INEEL CERCLA Disposal Facility (ICDF) prompted questions about how that planned facility will protect the aquifer. What about the floodplain siting of the ICDF? What about its lining? How will disposal at the ICDF meet regulatory requirements? [F7-37, F7-42, N3-6]

    Response: The ICDF is being planned under Waste Area Group 3 at the Idaho Nuclear Technology and Engineering Center (INTEC; formerly the Idaho Chemical Processing Plant). A description of the proposed ICDF, including its siting, design, capacity, lifespan, and waste acceptance criteria, was presented in October 1998, in the Proposed Plan *for waste Area Group 3 at the Idaho Chemical Processing Plant.* The Record of Decision for Waste Area Group 3 is expected to be finalized in September 1999.

Appendix A

Responsiveness Summary Comments

Appendix A

Comment Documents and Responses

This appendix accompanies the Responsiveness Summary, Part III of the Record of Decision (ROD) for Operable Unit 1-10 of Waste Area Group (WAG) 1, Test Area North (TAN), at the Idaho National Engineering and Environmental Laboratory (INEEL). It contains the scanned images of all written comments received before the close of the comment periods, on both the original February and revised November proposed plans, and transcripts of oral comments made during the formal comment session of each public meeting.

The scanned images are annotated with sidebars indicating the identified comments, using a three-part alphanumeric code to designate the document number, comment number within it, and response or responses in the Responsiveness Summary relevant to this comment. Each document number begins with an F, N, or T, identifying it as a written comment received following the February proposed plan (F), a written comment received following the November proposed plan (N), or an oral comment made during the formal comment period of a public meeting (T). All public meetings held were concerning the February proposed plan. The number following the letter F, N, or T was assigned to each separately received document according to the order in which it was received. The second number, following the hyphen, identifies comments identified within each document. Following the slash, the final number or numbers denote the response within the Responsiveness Summary that addresses the comment.

Adjacent to the scanned comments are the Agency responses to them. Most responses are presented on the same page as the comments they address. In cases where many comments were identified on a single page, the responses may continue onto following pages. Responses to comments that are identical or very similar in nature are repeated throughout the document. Comments that were grouped under the same issue code for the Responsiveness Summary may not have identical responses, however, depending on which portion of the response is germane to a particular comment.

This Responsiveness Summary identified and responded to more than 250 statements of preferences and concerns, comments, and questions received in more than 60 pages of written comments from at least 20 individuals and interested groups, and as formal statements at three public meetings. The following indexes summarize the numbers of comments received on the various issues of concern defined in the Responsiveness Summary, and list the individuals and groups who submitted comments in writing or presented them orally at a public meeting

Index of Public Comments and Responses by Issue of Concern

Comment Category[a]	Issue	Response Numbers[a]	Documents Containing Comments on Issue	Number of Commenters[b] on Issue	Number of Comments on Issue
2.1.1	Overall Goals and Structure of the INEEL Environmental Restoration Program	1-6	F02, F04, F06, F07, F10, N01, N03, N05, N07, T01, T03	8	16
2.1.2	Public Participation and Community Relations	7-9	F02, F03, F04, F06, F07, F12, N03, N04, N05, N07,T02	8	13
2.1.3	Content and Organization of the Proposed Plan	10-12	F07, F09, F10, F12, N01, N03, N04, N05, N06, N07,	7	22
2.1.4	Current and Future Activities at TAN	13	F07, N01	1	2
2.1.5	WAG 1 Remediation Planning and Costs	14-18	F05, F06, F10, N02, N03, N04, N07,	6	11
2.2.1	The Comprehesive RI/FS (including General Comments, Inclusion of Sites, and Classification of Contaminants)	19-24	F05, F07, F10, N01, N03, T03	3	21
2.2.2	Risk Assessment	25-29	F01, F02,F06, F07, F10, N01, N04, N06, N07	8	12
2.2.3	Remedial Action Objectives and Compliance with ARARs	30-33	F06, F07, F10, N01	3	11
2.2.4	Development of Alternatives	34-37	F02, F06, F07, F09, F10, F12, N01, N03, N05	7	15
2.2.5	Implementation of Alternatives (including Environmental Monitoring and Institutional controls)	38-41	F03, F05, F10, N03, N06	4	6
2.2.6	Evaluation of Alternatives	42-46	F05, F06, F08, N05	4	8
2.3.1	V-Tanks (TSF-09 and TSF-18) Site Description and Alternatives	47-54	F06, F07, F09, F12, N01, N02, N03, N05, N06, T01	9	45
2.3.2	PM-2A Tanks (TSF-26) Site Description and Alternatives	55-58	F06, F07, N01, N02, N03, N05, N06, T01	7	15
2.3.3	Soil Contamination Area South of the Turntable (TSF-06. Area B) Site Description and Alternatives	59-61	N01, N02, N05, N06, T01	5	5
2.3.4	Disposal Pond (TSF-07) Site Description and Alternatives	62-68	F07, F08, F12, N01, N02, N06, N07, T01	6	14
2.3.5	Burn Pits (TSF-03 and WRRTF-01) Site Description and Alternatives	69-73	F06, F07, N01, N02, N05, N06, N07, T01	7	18
2.3.6	Mercury Spill Area (TSF-08) Site Description and Alternatives	74-78	F06, F07, F11, F12, N01, N05, N06, N07, T01	7	13
2.3.7	Fuel Leak (WRRTF-13) Site Description and Alternatives	79-81	F06, F07, N01, N02, N06	5	14
2.4.1	The Snake River Plan Aquifer/Groundwater	83	F06, F07, N01, N03	3	10

a. Comment category and response numbers are those used in the Responsiveness Summary, Part of this ROD.
b. The number of Commentors is an estimate of separate individuals or organizations submitting comments one or more times on the TAN proposed plan. Individuals or organizations that submitted more than one set of comments, or spoke at a public meeting in addition to submitting comments, are counted only once.

Index of Public Comments and Responses by Commenter

Name of Commenter	Organization or Affiliation (as shown or stated in comments)	City (and State, if not Idaho)	Number of Pages Submitted	Document Number Assigned	Number of Comments Identified	Number of Issues of Concern	Appendix Page Numbers
Schmalz, Bruce L.		Idaho Falls	1	F01	2	2	3-4
Harten, Kenneth		Pocatello	4	F02	5	7	5-8
Detonancour., D.H. "Doc"	Local 2-652 President, Oil, Chemical and Atonic Workers International Union (AFL-CIO)	Idaho Falls	1	F03	1	2	9
Bar, Stephen L.		Kuna	1	F04	2	2	10
Hinman. George W.		Pullman, Washington	1	F05	5	6	11-12
R.M.L.		Rigby	4	F06	21	29	13-20
Christopher, Jim		unknown	8	F07	45	59	21-30
Loveland, KayLin	DOE Program Manager, Envirocare of Utah, Inc.	Salt Lake City, Utah	2	F08	6	6	31-33
Timm, Christopher M.		Albuquerque, New Mexico	1	F09	6	7	34-36
Broscious, Chuck	Environmental Defense Institute	Troy	7	F10	12	13	37-45
Farrar, Lawrence C.	Montec Associates	Butte, Montana	2	F11	1	1	46-47
INEEL Citizens Advisory Board	INEEL Citizens Advisory Board	Idaho Falls	2	F12	9	10	48-49
Christopher, Jim		uknown	8	N01	50	54	50-63
[name not provided]		unknown	1	N02	6	8	64
Broscious, Chuck	Environmental Defense Insitute	Troy	10	N03	16	21	65-75
Commander, John	Treasurer, Coalition 21	Idaho Falls	2	N04	8	8	76-77
Brailsford, Beatrice	Program Director, Snake River Alliance	Pocatello	3	N05	13	16	78-83
Carpenter, Ted L.	Project Evironmentalist, Tribal DOE Program, Shoshone-Bannock Tribes	Fort Hall	3	N06	12	13	84-87
INEEL Citizens Advisory Board	INEEL Citizens Advisory Board	Idaho Falls	3	N07	11	11	88-90
[name not provides]		Idaho Falls public meeting	2	T01	2	9	91
Allister, Pam	Snake River Alliance	Boise public meeting	1	T02	1	1	92
Broscious, Chuck	Environmental Defense Institute	Moscow public meeting	2	T03	2	3	94-95

Appendix B

Administrative Record File Index

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
ADMINISTRATIVE RECORD FILE INDEX FOR THE
TRACK 1 INVESTIGATION OF TAN OU 1-01
03/31/95

ADMINISTRATIVE RECORD VOLUME I
FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2617
Title: IET-05, Initial Assessment for the IET Foam Stabilizer Tank (TAN-317)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2618
Title: IET-06, Initial Assessment for the IET Injection Well (TAN-732)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2237
Title: LOFT-03, Initial Assessment for the LOFT Rubble Pit S of LOFT Disposal Pond
Author: Alexander, T.G.
Recipient: Clark, C.
Date: 01/12/88

& Document #: 2756
Title: LOFT-07, Initial Assessment for the LOFT Foam Solution Tank (TAN-119)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2760
Title: LOFT-11, Initial Assessment for the LOFT Cryogen Pits (3) E. of TAN-629
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2704
Title: TSF-01, Initial Assessment for the TSF Diesel Tank (3000 gal.) W of TAN-607 & Fuel Spill
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

IDAHO NATIONAL ENGINEERING AND ENVIRONMENTAL LABORATORY
ADMINISTRATIVE RECORD FILE INDEX FOR THE
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FILE NUMBER

AR1.7 INITIAL ASSESSMENTS (continued)

& Document #: 2707
Title: TSF-04, Initial Assessment for the TSF Gravel Pit/Acid Pit
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 08/01/86

& Document #: 2732
Title: TSF-11, Initial Assessment for the TSF Three Clarifier Pits E of TAN-604
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR3.5 TRACK 1 INVESTIGATIONS

& Document #: 5283
Title: LOFT-11 Cryogen Pits (3) E. of TAN-629, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/21/93

& Document #: 5284
Title: IET-05, Underground Storage Tank (TAN-1714), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/21/93

& Document #: 5286
Title: LOFT-14, Asbestos Piping, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/21/93

& Document #: 5297
Title: LOFT-03, LOFT Rubble Pit S. of LOFT Disposal Pond, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/23/93

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FILE NUMBER

AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5300
Title: TSF-04, TSF Gravel Pit and Acid Pit, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/24/93

& Document #: 5556
Title: TSF-39, Transite Asbestos Contamination, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/24/93

ADMINISTRATIVE RECORD VOLUME II

& Document #: 5562
Title: TSF-11, Three Clarifier Pits East of TAN-604, No Further Action
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5563
Title: TSF-42, Tan-607A Room 161, Contaminated Pipe, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5558
Title: LOFT-15, LOFT Buried Asbestos Pit, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/21/93

& Document #: 5570
Title: TSF-01, Underground Storage Tank (TAN-1702), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 10/18/93

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03/31/95

FILE NUMBER

AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5678
Title: IET-06, IET Injection Well (TAN 332), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 04/12/94

& Document #: 5681
Title: TSF-43, RPSSA Pads, Determination To Be Made In WAG Wide RI/FS
Author: N/A
Recipient: N/A
Date: 04/13/94

& Document #: 10003
Title: LOFT-07, Foam Solution Tank (TAN-119)
Author: N/A
Recipient: N/A
Date: 02/08/95

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 5716
Title: Transcripts - Public meeting in Idaho Falls on the Proposed Plan for the Test Area North Groundwater Contamination (OU 1-01, 1-02, and 1-09)
Author: Transcripts - Public Meeting in Boise, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination (OU 1-01, 1-02, and 1-09)
Author: Graham, D.
Recipient: N/A
Date: 06/08/94

& Document #: 5717
Title: Transcripts - Public Meeting in Boise, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination (OU 1-01, 1-02, and 1-09)
Author: Graham D.
Recipient: N/A
Date: 06/08/94

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FILE NUMBER

AR10.4 PUBLIC MEETING TRANSCRIPTS (continued)

& Document #: 5718
Title: Transcripts - Public Meeting in Moscow, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination (OU 1-01, 1-02, and 1-09)
Author: Graham D.
Recipient: N/A
Date: 06/09/94

NOTE: The Public Meeting Transcripts can be found in Administrative Record Binder 1-07B Volume V.

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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ADMINISTRATIVE RECORD VOLUME I
FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2614
Title: IET-01, Initial Assessment for the IET Gasoline Storage Tank (TAN-318)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2615
Title: IET-09, Initial Assessment for the IET Lube Oil Tank (TAN-316)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2754
Title: LOFT-05, Initial Assessment for the LOFT Two Fuel Tanks (2) TAN-109 A & B
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2755
Title: LOFT-06, Initial Assessment for the LOFT Slop Tank E. of TAN-631,
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2757
Title: LOFT-08, Initial Assessment for the LOFT Tank in Borrow Pits (TAN-110)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2730
Title: TSF-13, Initial Assessment for the TSF Gasoline Tank N of TAN-610
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

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08/06/99

FILE NUMBER

AR1.7 INITIAL ASSESSMENTS (continued)

& Document #: 2729
Title: TSF-14, Initial Assessment for the TSF Fuel Oil Tank NW of TAN-603
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2728
Title: TSF-15, Initial Assessment for the TSF Fuel Oil Tank W of TAN-603
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2694
Title: TSF-24, Initial Assessment for the TSF Oil Sumps (TAN-609)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2695
Title: TSF-25, Initial Assessment for the TSF Fuel Tank Under SW Corner of TAN-607
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2702
Title: TSF-32, Initial Assessment for the TSF Oil Tank S. of TAN-601 (Between Gatehouse and Substation),
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2703
Title: TSF-33, Initial Assessment for the TSF T-11 Fuel Tank E. of TAN-602,
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

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08/06/99

FILE NUMBER

AR1.7 INITIAL ASSESSMENTS (continued)

& Document #: 2631
Title: WRRTF-09, Initial Assessment for the WRRTF Diesel Fuel Tank (TAN-103)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2632
Title: WRRTF-10, Initial Assessment for the WRRTF Gasoline Tank (TAN-644)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

AR3.5 TRACK 1 INVESTIGATIONS

& Document #: 5339
Title: WRRTF-09 Underground Storage Tank (TAN-788), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/26/93

& Document #: 5236
Title: IET-09 Underground Storage Tank (TAN-316), No Further Action
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/06/93

& Document #: 5282
Title: TSF-32, Underground Storage Tank (TAN-601S), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/21/93

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FILE NUMBER

AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5285
Title: LOFT-08 Underground Storage Tank (TAN-764), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/21/93

& Document #: 5294
Title: WRRTF-10, Underground Storage Tank (TAN-644), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/23/93

ADMINISTRATIVE RECORD VOLUME II

& Document #: 5296
Title: TSF-33, Underground Storage Tank (TAN-602E), No Further Action
Author: N/A
Recipient: N/A
Date: 06/23/93

& Document #: 5298
Title: LOFT-06, LOFT Slop Tank E. of TAN-631, No Further Action
Author: N/A
Recipient: N/A
Date: 06/23/93

& Document #: 5299
Title: LOFT-05, LOFT Two Fuel Tanks TAN-109A and B, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/24/93

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AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5301
Title: IET-01, Underground Storage Tank (TAN-318), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/24/93

& Document #: 5557
Title: TSF-24, Underground Storage Tank (TAN-775), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5555
Title: WRRTF-12, WRRTF Diesel Fuel Underground Storage Tank (TAN-1706), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/20/93

& Document #: 5560
Title: IET-10, IET Diesel Fuel Underground Storage Tank, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/21/93

& Document #: 5561
Title: IET-11, IET Heating Oil Underground Storage Tank, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 10/04/93

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TRACK 1 INVESTIGATION OF TAN OU 1-02
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AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5564
Title: TSF-15, Underground Storage Tank (TAN-779), No Further Action
Author: N/A
Recipient: N/A
Date: 09/20/93

& Document #: 5565
Title: TSF-13, Underground Storage Tank North of TAN-610 (TAN-1721) No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5658
Title: TSF-14, Underground Storage Tank North (TAN-777B), No Further Action Determination
Author: N/A
Recipient: N/A
Date: 04/01/94

& Document #: 5680
Title: TSF-25, Underground Drain Sump East of TAN-609, No Further Action
Author: N/A
Recipient: N/A
Date: 04/12/94

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 5716*
Title: Public Meeting Transcripts - Public Meeting in Idaho Falls, Idaho on the Proposed Plan or the TAN Groundwater Contamination (OU 1-01, 1-02, and 1-09)
Author: Schwartz, N.
Recipient: N/A
Date: 06/06/94

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AR10.4 PUBLIC MEETING TRANSCRIPTS (continued)

& Document #: 5717*
Title: Public Meeting Transcripts - Proposed Plan, TAN Groundwater Contamination (Boise)
Author: Graham, D.
Recipient: N/A
Date: 06/08/94

Document #: 5718*
Title: Public Meeting Transcripts - Proposed Plan, TAN Groundwater Contamination (Moscow)
Author: Graham D.
Recipient: N/A
Date: 06/09/94

NOTE: *The Public Meeting Transcripts can be found in Administrative Record Binder 1-07B volume V.

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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ADMINISTRATIVE RECORD VOLUME I
FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2705
Title: TSF-02, Initial Assessment for the TSF Service Station Spill (TAN-664)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2706
Title: TSF-03, Initial Assessment for the TSF Burn Pit
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2623
Title: WRRTF-01, Initial Assessment for the WRRTF Burn Pit
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR2.5 ACTION MEMORANDUM

& Document #: 5755
Title: Lead Agency Action Memorandum Removal Action for TSF-38 Bottle Site
Author: Michael, D.L.
Recipient: N/A
Date: 07/15/94

AR2.8 WORK PLAN

& Document #: 5508
Title: Removal Action Plan for TAN TSF-38 Laboratory Container Disposal Area (Bottle Site)
Author: IT Corporation
Recipient: N/A
Date: 06/01/94

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FILE NUMBER

AR2.10 HAZARD CLASSIFICATION

& Document #: ER-94-035
Title: Hazard Classification for the Remediation of TAN OU 1-03 Inactive Waste Site TSF-38 at the INEL
Author: Valenti, L.N.
Recipient: N/A
Date: 06/01/94

ADMINISTRATIVE RECORD VOLUME II

AR3.14 TRACK 2 SUMMARY REPORT

& Document #: INEL-95/0195, Rev. 0
Title: Summary Report for the TSF-38 Bottle Site Removal Action
Author: N/A
Recipient: N/A
Date: 04/01/95

& Document #: EGG-ER-10554, Rev. 0
Title: Preliminary Scoping Track 2 Summary Report for Operable Unit 1-03
Author: Meyer, T.J.; Trippet, W.A.; Hood, (Kaal), K.K.; Loehr, C.A.
Recipient: Not specified
Date: 04/01/93

AR3.22 TRACK 2 DECISION STATEMENT

& Document #: 10283
Title: Track 2 Decision Statement of Operable Unit 1-03 Hydrocarbon Contamination sites
Author: DOE-ID; EPA; IDHW
Recipient: N/A
Date: 05/15/96

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10/02/98

FILE NUMBER

AR10.3 PUBLIC NOTICE

& Document #: 5792
Title: Public Comment Period: October 5 to November 5, 1994 on Removal Actions at the INEL
Author: INEL Community Relations
Recipient: N/A
Date: 10/01/94

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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ADMINISTRATIVE RECORD BINDER I
FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2748
Title: LOFT-02, OU 1-04 Initial Assessment for the LOFT Disposal Pond (TAN-75)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2731
Title: TSF-12, OU 1-04 Initial Assessment for the TSF Acid Neutralization Sump N of TAN-602
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2688
Title: TSF-17, OU 1-04 Initial Assessment for the TSF Two Neutralization Pits N of TAN-649
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2690
Title: TSF-19, OU 1-04 Initial Assessment for the TSF Caustic Tank V-4 S. of TAN-616
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2691
Title: TSF-20, OU 1-04 Initial Assessment for the TSF Two Neutralization Pits N of TAN-607
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2699
Title: TSF-29, OU 1-04 Initial Assessment for the TSF Acid Pond (TAN-735) TSF-29
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 10/09/86

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AR1.7 INITIAL ASSESSMENTS (continued)

& Document #: 2701
Title: TSF-31, OU 1-04 Initial Assessment for the TSF Acid Pit W. of TAN-647)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR3.10 SCOPE OF WORK

& Document #: 5293
Title: Scope of Work for Operable Units 1-04 and 1-05 Track 2 Investigation
Author: DOE
Recipient: N/A
Date: 01/22/93

AR3.11 FIELD SAMPLING

& Document #: EGG-ER-10679
Title: Track 2 Field Sampling Plan for OU 1-04 and 1-05; Test Area North
Author: Meyer, T.J.; Trippet II, W.A.; Hood (Kaal), K.K.; Reneau, M.R.; Filemyr, R.G.; Tucker, J.K.; Munyon, K.A.; Hadley, J.T.
Recipient: N/A
Date: 04/01/93

ADMINISTRATIVE RECORD BINDER II

AR3.14 TRACK 2 SUMMARY REPORT

& Document #: INEL-94/0091, Rev. 1
Title: Preliminary Scoping Track 2 Summary Report for the Test Area North OU 1-04; Caustic Contamination Sites
Author: IT Corporation
Recipient: N/A
Date: 10/01/94

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ADMINISTRATIVE RECORD BINDER III

AR3.22 TRACK 2 DECISION STATEMENT

& Document #: 10284
Title: Track 2 Decision Statement for Operable Unit (OU) 1-04 Caustic Contamination sites
Author: DOE-ID; EPA, IDHW
Recipient: N/A
Date: 05/15/96

AR12.1 EPA COMMENTS

& Document #: 5692
Title: Review Comments of Draft Track 2 Summary Report for the Test Area North Operable Unit 1-04: Caustic Contamination Sites
Author: Liverman, E.
Recipient: Green, L.
Date: 04/04/94

& Document #: 10291
Title: Review Comments of the Draft Track 2 Field Sampling Plan: Test Area North OU 1-04 and OU 1-05
Author: Liverman, E.
Recipient: Harelson, D.
Date: 04/12/93

AR12.2 IDHW COMMENTS

& Document #: 5693
Title: Review of the Draft Track Two Summary Report for Operable Unit 1-04
Author: English, M.
Recipient: Green, L.
Date: 04/25/94

& Document #: 5866
Title: Review of the Draft Track Two Summary Report for Operable Unit 1-04
Author: English, M.
Recipient: Fontana, R.
Date: 01/23/95

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FILE NUMBER

AR12.2 IDHW COMMENTS (continued)

& Document #: 10292
Title: Technical Review of the Draft Track 2 Field Sampling Plan for Operable Unit 1-04 and 1-05
Author: English, M.
Recipient: Harelson, D.
Date: 04/12/93

AR12.4 REQUEST FOR EXTENSION

& Document #: 5685
Title: IDHW Comments on the Draft Track 2 Summary Report for Operable Unit (OU) 1-04: Caustic Contamination Sites
Author: English, M.
Recipient: Green, L.; Pierre, W.
Date: 04/04/94

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2616
Title: IET-04, OU 1-05 Initial Assessment for the IET Stack Rubble Site
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2621
Title: IET-07, OU 1-05 Initial Assessment for the IET Hot Waste Tank (TAN-319)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2709
Title: TSF-06, OU 1-05 Initial Assessment for the TAN/TSF-1 Area (Soil Area)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2726
Title: TSF-09, OU 1-05 Initial Assessment for the TSF Intermediate-Level (Radioactive) Waste Disposal System
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2733
Title: TSF-10, OU 1-05 Initial Assessment for the TSF Drainage Pond (TAN-782)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2689
Title: TSF-18, OU 1-05 Initial Assessment for the TSF Contaminated Tank SE of Tank V-3
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

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TRACK 2 INVESTIGATION OF OPERABLE UNIT 1-05
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ARI.7 INITIAL ASSESSMENTS (continued)

& Document #: 2236
Title: TSF-21, OU 1-05 Initial Assessment for the TSF IET Valve Pit
Author: Alexander, T.G.
Recipient: Clark, C.
Date: 07/06/87

& Document #: 2696
Title: TSF-26, Initial Assessment for the TSF PM-2A Tanks (TAN-710 A&B)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2626
Title: WRRTF-04, Initial Assessment for the WRRTF Radioactive Liquid Waste Tank
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

AR3.10 SCOPE OF WORK

& Document #: 5293
Title: Scope of Work for Operable Units 1-04 and 1-05 Track 2 Investigation
Author: DOE
Recipient: N/A
Date: 01/22/93

NOTE: This document can be found in the INEL Administrative Record binder 1-04

AR3.11 FIELD SAMPLING

& Document #: EGG-ER-10679
Title: Track 2 Field Sampling Plan for OU 1-04 and 1-05: Test Area North
Author: Meyer, T.J.
Recipient: N/A
Date: 04/01/93

NOTE: This document can be found in the INEL Administrative Record binder 1-04

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ADMINISTRATIVE RECORD BINDER II
FILE NUMBER

AR3.14 TRACK 2 SUMMARY REPORT

& Document #: INEL-94/0135 (To Appendix F)
Title: Preliminary Scoping Track 2 Summary Report for the Test Area North OU 1-05, Radioactive Contamination Sites
Author: IT Corporation
Recipient: N/A
Date: 10/01/94

ADMINISTRATIVE RECORD BINDER III

& Document #: INEL-94/0135 (Appendix F through K)
Title: Preliminary Scoping Track 2 Summary Report for the Test Area North OU 1-05, Radioactive Contamination Sites
Author: IT Corporation
Recipient: N/A
Date: 10/01/94

ADMINISTRATIVE RECORD BINDER IV

AR3.22 TRACK 2 DECISION STATEMENT

& Document #: 10285
Title: Track 2 Decision Statement for Operable Unit 1-05 Radioactive Contamination sites
Author: DOE-ID; EPA; IDHW
Recipient: N/A
Date: 05/15/96

AR12.1 EPA COMMENTS

& Document #: 5712
Title: Review Comments of the Draft Preliminary Scoping Track 2 Summary Report for the Test Area North Operable Unit 1-05: Radioactive Contamination Sites
Author: Liverman, E.
Recipient: Green, L.
Date: 05/25/94

& Document #: 10291
Title: Review Comments of the Draft Track 2 Field Sampling Plan: Test Area North OU 1-04
Author: Liverman, E.
Recipient: Harelson, D.
Date: 04/12/93

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FILE NUMBER

AR12.2 IDHW COMMENTS

& Document #: 5705
Title: Review of the Draft Track Two Summary Report for Operable Unit 1-05
Author: English, M.
Recipient: Green, L.
Date: 05/23/94

& Document #: 5867
Title: Revised IDHW Comment Resolution Tables for OU 1-05 Radioactive Sites Track 2 Summary Report
Author: Not specified
Recipient: Green, L.
Date: 01/17/95

& Document #: 10292
Title: Technical Review of the Draft Track 2 Field Sampling Plan for Operable Unit 1-04 and 1-05
Author: English, M.
Recipient: Harelson, D.
Date: 04/12/93

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2749
Title: LOFT-01, Initial Assessment for the LOFT Diesel Fuel Spills (TAN-629)
Author: Saint-Louis, M.L.
Recipient: Clark, C
Date: 09/24/86

& Document #: 2759
Title: LOFT-10, Initial Assessment for the LOFT Sulfuric Acid Spill (TAN-771)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2710
Title: TSF-07, Initial Assessment for the TSF Disposal Pond
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2745
Title: TSF-08, Initial Assessment for the TSF HTRE III Mercury Spill Area
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR1.8 ENGINEERING DESIGN FILE

& Document #: ER-WAG1-108
Title: EDF - TAN TSF-07 Pond Radium-226 Concentrations and Corrections
Author: Giles, J.R.
Recipient: Not specified
Date: 06/01/98

AR3.2 SAMPLING DATA

& Document #: EGG-ERD-10422
Title: Evaluation of Historical & Analytical Data on the TAN TSF-07 Disposal Pond
Author: Medina, S.M.
Recipient: N/A
Date: 07/01/93

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FILE NUMBER

AR3.5 TRACK 1 INVESTIGATION

& Document #: 5590
Title: Track 1 Investigation of the LOFT Sulfuric Acid Spill - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 12/01/93

& Document #: 5591
Title: Track 1 Investigation of the LOFT Diesel Fuel Spills (TAN-629) - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 12/01/93

& Document #: 5679
Title: Track 1 Investigation of the TSF-07 Disposal Pond - Perform Removal Action or Include in Site Wide RI/FS
Author: N/A
Recipient: N/A
Date: 04/13/94

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 5716*
Title: Public Meeting Transcripts - Public Meeting In Idaho Falls on the Proposed Plan for TAN Groundwater Contamination
Author: Schwartz, N.
Recipient: N/A
Date: 06/06/94

& Document #: 5717*
Title: Public Meeting Transcripts - Public Meeting In Boise on the Proposed Plan for TAN Groundwater Contamination
Author: Schwartz, N.
Recipient: N/A
Date: 06/08/94

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TRACK 2 INVESTIGATION OF OU 1-06
08/06/99

FILE NUMBER

AR10.4 PUBLIC MEETING TRANSCRIPTS (continued)

& Document #: 5718*
Title: Public Meeting Transcripts - Public Meeting In Moscow on the Proposed Plan for TAN Groundwater Contamination
Author: Schwartz, N.
Recipient: N/A
Date: 06/09/94

***NOTE:** **Public Meeting Transcripts can be found in Administrative Record Binder 1-07B Volume V.**

NOTE: **Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.**

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ADMINISTRATIVE RECORD VOLUME I
FILE NUMBER

AR1.1 BACKGROUND

& Document #: 3533
Title: Contaminants of Concern in the Test Area North Groundwater
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 3534
Title: Summary of RCRA Facility Investigation Activities at TAN
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 5169
Title: Assessment of the groundwater pathway from the leaching of surficial and buried contamination
Author: N/A
Recipient: N/A
Date: 07/29/92

& Document #: 5171
Title: Suitability Evaluation for Interim Action Discharge to the TSF-07 Disposal Pond
Author: Harelson, D.B.
Recipient: N/A
Date: 09/01/92

& Document #: RLN-51-92
Title: Discharge Calculation
Author: Nitschke, R.L.
Recipient: Zimmerle, J.R.
Date: 07/30/92

& Document #: DOE/ID-22077
Title: Radionuclides in Ground Water at the INEL, Idaho
Author: Knobel, L.L.
Recipient: N/A
Date: 12/01/88

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FILE NUMBER

AR1.1 BACKGROUND (continued)

& Document #: DOE/ID-22101
Title: Chemical Constituents in the Dissolved and Suspended Fractions of Ground Water from Selected Sites, Idaho national Engineering Laboratory and Vicinity, Idaho, 1989
Author: Knobel, L.L.
Recipient: N/A
Date: 03/01/92

& Document #: 5172
Title: Plutonium, Am, Cm, and Sr in Ducks maintained on Radioactive Leaching Ponds in Southeastern Idaho
Author: Knobel, L.L.
Recipient: N/A
Date: 09/01/88

& Document #: DOE/ID-22074
Title: Purgeable Organic Compounds in Groundwater at the Idaho National Engineering Laboratory, Idaho
Author: Mann, L.J.
Recipient: N/A
Date: cant read

& Document #: DOE/ID-22089
Title: Purgeable Organic Compounds in Groundwater at the Idaho National Engineering Laboratory, Idaho 1988 and 1989
Author: Mann, L.J.
Recipient: N/A
Date: 07/0l/90

AR1.7 INITIAL ASSESSMENTS

& Document #: 1034
Title: TSF-05, Initial Assessment for the TSF Injection Well
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

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ADMINISTRATIVE RECORD VOLUME II
FILE NUMBER

AR3.3 WORK PLAN

& Document #: EGG-WM-9905
Title: RI/FS Work Plan and Addenda for the TAN Groundwater Operable Unit at the INEL
Author: Zimmerle, J.R.
Recipient: N/A
Date: 05/01/92

ADMINISTRATIVE RECORD VOLUME III

AR3.10 SCOPE OF WORK

& Document #: 5070
Title: Scope of Work For An Interim Action on the Groundwater at the Test Area North
Author: Zimmerle, J.R.
Recipient: N/A
Date: 08/14/91

AR4.3 PROPOSED PLAN

& Document #: 3532 (The Proposed Plan is included in the Dear Citizen Pamphlet)
Title: Proposed Plan for an Interim Action to Reduce the Contamination Near the Injection Well and in the Surrounding Groundwater at the Test Area North, Idaho National Engineering Laboratory
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 3539
Title: Technologies Assessed in the Development of the "Proposed Plan" for an Interim Action to Reduce the Contamination Near the Injection Well and in the Surrounding Groundwater at the Test Area North, INEL
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/22/92

& Document #: 5069
Title: WAG 1 Test Area North Interim Action Proposed Plan Cost Estimate for Alternatives 2, 3, and 4
Author: EG&G and MK-FIC
Recipient: N/A
Date: 01/20/92

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FILE NUMBER

AR5.1 RECORD OF DECISION

& Document #: 5202
Title: Record of Decision for the Technical Support Facility Injection Well and Surrounding Groundwater Contamination
Author: INEL Community Relations
Recipient: N/A
Date: 09/01/92

AR10.3 PUBLIC NOTICE(s)

& Document #: 3531
Title: Citizens Are Asked to Comment - Public Comment on Test Area North Injection Well and Unexploded Ordnance
Author: INEL Community Relations
Recipient: N/A
Date: 01/05/92

& Document #: 4434
Title: Comment Period Extended on the Proposed Plan for an Interim Action to Reduce Contamination at TAN
Author: INEL Community Relations
Recipient: N/A
Date: 02/17/92

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 4602
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Boise)
Author: Schwartz, N.
Recipient: N/A
Date: 02/05/92

& Document #: 4603
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Idaho Falls)
Author: Graham, D.
Recipient: N/A
Date: 02/04/92

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FILE NUMBER

AR10.4 PUBLIC MEETING TRANSCRIPTS (continued)

& Document #: 4605
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Burley)
Author: Ledbetter, L.
Recipient: N/A
Date: 02/06/92

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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ADMINISTRATIVE RECORD VOLUME I
FILE NUMBER

AR1.1 BACKGROUND

& Document #: 3534
Title: Summary of RCRA Facility Investigation Activities at Test Area North
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 5169*
Title: Assessment of the Groundwater Pathway from the Leaching of Surficial and Buried Contamination
Author: N/A
Recipient: N/A
Date: 07/29/92

& Document #: 5171*
Title: Suitability Evaluation for Interim Action Discharge to the TSF-07 Disposal Pond
Author: Harelson, D.B.
Recipient: N/A
Date: 09/01/92

& Document #: RLN-51-92*
Title: Discharge Calculation
Author: Nitschke, R.L.
Recipient: Zimmerle, J.R.
Date: 07/30/92

& Document #: DOE/ID-22077*
Title: Radionuclides in Ground Water at the INEL
Author: Knobel, L.L.
Recipient: N/A
Date: 12/01/88

& Document #: DOE/ID-22101*
Title: Chemical Constituents in the Dissolved and Suspended Fractions of Ground Water from Selected Sites, INEL and Vicinity, Idaho, 1989
Author: Knobel, L.L.
Recipient: N/A
Date. 03/01/92

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

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FILE NUMBER

AR1.1 BACKGROUND (continued)

& Document #: 5172*
Title: Plutonium, Am, Cm, and Sr in Ducks Maintained on Radioactive Leaching Ponds in Southeastern Idaho
Author: Markham, O.D.
Recipient: N/A
Date: 09/01/88

& Document #: DOE/ID-22074*
Title: Purgeable Organic Compounds in Ground Water at the Idaho National Engineering Laboratory, Idaho
Author: Mann, L.J.
Recipient: N/A
Date: 12/01/87

& Document #: DOE/ID-22089*
Title: Purgeable Organic Compounds in Groundwater at the Idaho National Engineering Laboratory, Idaho 1988 and 1989
Author: Mann, L.J.
Recipient: N/A
Date: 07/01/90

& Document #: DOE/ID-22104
Title: Purgeable Organic Compounds in Groundwater at the Idaho National Engineering Laboratory, Idaho 1990 and 1991
Author: Mann, L.J.
Recipient: N/A
Date: 07/01/92

& Document #: IDO-22061
Title: Organic Soludes in Groundwater at the Idaho National Engineering Laboratory
Author: Leenheer; Jefferson
Recipient: N/A
Date: 03/01/82

& Document #: IDO-22021
Title: Water Supply and Waste Disposal at Proposed ANPR Site, National Reactor Testing Station, Idaho
Author: Nace, R.L.
Recipient: Director, Engineering & Construction
Date: 09/05/52

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

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FILE NUMBER

AR1.1 BACKGROUND (continued)

& Document #: IDO-22023
Title: Geology, Groundwater, and Waste-Disposal at the Aircraft Nuclear Propulsion Project Site, National Reactor Testing Station, Idaho
Author: Nace, R.L.
Recipient: N/A
Date: 12/01/52

AR1.7 INITIAL ASSESSMENTS

& Document #: 1034*
Title: TSF-05, Initial Assessment for the TSF Injection Well
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

AR3.2 SAMPLING AND ANALYSIS DATA

& Document #: EGG-ERD-10422
Title: Evaluation of Historical and Analytical Data on the TAN TSF-07 Disposal Pond
Author: Medina, S.M.
Recipient: N/A
Date: 07/01/93

& Document #: 5701, Rev. 4
Title: Evaluation of Chemicals Used at TAN
Author: N/A
Recipient: N/A
Date: 04/20/92

ADMINISTRATIVE RECORD VOLUME II

AR3.3 WORK PLAN

& Document #: EGG-WM-9905*
Title: RI/FS Work Plan and Addenda for the TAN Groundwater OU at the INEL
Author: Zimmerle, J.R.
Recipient: N/A
Date: 05/01/92

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

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FILE NUMBER

AR3.4 RI REPORTS

& Document #: EGG-ER-10643, Vol. 1
Title: Remedial Investigation Final Report With Addenda for the Test Area North Groundwater Operable Unit 1-07B at the INEL
Author: Kaminski, J.F.
Recipient: N/A
Date: 01/01/94

ADMINISTRATIVE RECORD VOLUME III

& Document #: EGG-ER-10643, Vol. 2
Title: Remedial Investigation Final Report With Addenda for the Test Area North Groundwater Operable Unit 1-07B at the INEL
Author: Kaminski, J.F.
Recipient: N/A
Date: 01/01/94

ADMINISTRATIVE RECORD VOLUME IV

AR3.4 RI REPORTS

& Document #: 5617
Title: Supplementary Evaluation of Environmental Consequences for Test Area North Groundwater Operable Unit 1-07B at the INEL
Author: DOE-ID
Recipient: N/A
Date: 06/30/94

AR3.10 SCOPE OF WORK

& Document #: EGG-WM-9809
Title: Scope of Work - TAN Groundwater RI/FS
Author: Zimmerle, J.R.
Recipient: N/A
Date: 09/01/91

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

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FILE NUMBER

AR3.12 RI/FS REPORTS

& Document #: 5695
Title: Supplement to the Operable Unit Remedial Investigation and Feasibility Study (RI/FS) Report
Author: N/A
Recipient: N/A
Date: 04/01/94

& Document #: OPE-ER-63-94
Title: Transmittal of the Supplement to the Operable Unit (OU) 1-07B Remedial Investigation and Feasibility Study (RI/FS) Report
Author: Green, L.
Recipient: Nygard, D.; Pierre, W.
Date: 03/17/94

AR4.2 FS REPORTS

& Document #: EGG-ER-10802
Title: Feasibility Study Report for Test Area North Groundwater Operable Unit (OU) 1-07B at the INEL
Author: Dunnivant, F.M.
Recipient: N/A
Date: 01/01/94

AR4.3 PROPOSED PLAN

& Document #: 3532
Title: DOE Studies Groundwater Contamination at the Test Area North
Author: INEL Community Relations
Recipient: Sato, W.N.
Date: 01/08/92

& Document #: OPE-ER-008-94
Title: Transmittal of the Draft Proposed Plan for the Test Area North (TAN) Operable Unit (OU) 1-07B Groundwater Investigation
Author: Lyle, J.L.
Recipient: Pierre, W.; Nygard, D.
Date: 01/13/94

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AR4.3 PROPOSED PLAN (continued)

& Document #: OPE-ER-027-94
Title: Recision of the Draft Proposed Plan for the Test Area North (TAN), Operable Unit (OU) 1-07B Groundwater and the Proposed Plan for the Track 1 Sites Designated for No Further Action
Author: Lyle, J.L.
Recipient: Nygard, D.; Pierre, W.
Date: 01/28/94

& Document #: OPE-ER-082-94
Title: Transmittal of the Revised Proposed Plan for the Test Area North (TAN) Operable Unit (OU) 1-07B Groundwater Remedial Investigation and Feasibility Study
Author: Lyle, J.L.
Recipient: Pierre, W.; Nygard, D.
Date: 04/15/94

& Document #: 5711
Title: Proposed Plan for Groundwater Contamination (Operable Unit (OU) 1-07B) and No Action Sites (Operable Units 1-01, -02, -06, -09), Test Area North
Author: N/A
Recipient: N/A
Date: 05/01/94

AR4.5 FS QUESTIONNAIRE

& Document #: MK-FIC-94-P-364
Title: Potential Remediation Studies for Enhancement Extraction Technologies Market Survey Questionnaire Package
Author: Hunko, D.P.; MK-Ferguson
Recipient: Addressee
Date: 05/03/94

AR5.1 RECORD OF DECISION

& Document #: 10139
Title: Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action
Author: INEL, EPA, IDHW
Recipient: N/A
Date: 08/18/95

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FILE NUMBER

AR5.3 EXPLANATION OF SIGNIFICANT DIFFERENCES

& Document #: INEEL/EXT-97-00931
Title: Explanation of Significant Differences from the Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action
Author: Jantz, A.E.
Recipient: Not specified
Date: 11/01/97

& Document #: 1088-06-29-120-A
Title: Agreement to Resolve Disputes
Author: DOE; EPA; IDHW
Recipient: Not specified
Date: 03/18/97

AR10.3 PUBLIC NOTICES

& Document #: 5700
Title: DOE Seeks Public Comment on the Proposed Plan for Test Area North
Author: INEL Community Relations
Recipient: N/A
Date: 05/20/94

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 4602*
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Boise)
Author: Schwartz, N.
Recipient: N/A
Date: 02/05/92

& Document #: 4603*
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Idaho Falls)
Author: Graham, D.
Recipient: N/A
Date: 02/04/92

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

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FILE NUMBER

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 4605*
Title: Transcripts - Proposed Plan to Reduce Contamination Near the Injection Well and Surrounding Groundwater at TAN (Burley)
Author: Ledbetter, L.
Recipient: N/A
Date: 02/06/92

NOTE: *These documents can be found in the Administrative Record Binder 1-07A

ADMINISTRATIVE RECORD VOLUME

& Document #: 5716
Title: Transcripts - Public Meeting in Idaho Falls, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination
Author: Schwartz, N.
Recipient: N/A
Date: 06/06/94

& Document #: 5717
Title: Transcripts - Public Meeting in Boise, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination
Author: Graham, D.
Recipient: N/A
Date: 06/08/94

& Document 5718
Title: Transcripts - Public Meeting in Moscow, Idaho on the Proposed Plan for the Test Area North Groundwater Contamination
Author: Graham, D.
Recipient: N/A
Date: 06/09/94

AR11.6 TECHNICAL MEMORANDUM

& Document #: C10017
Title: Technical Memorandum for the TAN Groundwater, OU 1-07B
Author: PRC Environmental Management, Inc.
Recipient: EPA
Date: 01/17/94

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FILE NUMBER

AR11.7 TECHNICAL EVALUATION

& Document #: 5694
Title: Letter Report - Technical Evaluation of the TAN OU 1-07B RI/FS and Proposed Plan
Author: GeoTrans, Inc.
Recipient: EG&G Idaho, Inc.
Date: 11/30/93

AR12.1 EPA COMMENTS

& Document #: 5341
Title: Review Comments for Draft RI Report W/Addenda for the TAN Groundwater Operable Unit at the INEL
Author: Liverman, E.
Recipient: Green, L.
Date: 07/09/93

& Document #: 5573
Title: Review of Draft RI/F Study for the TAN Groundwater Operable Unit 1-07B
Author: Liverman, E.
Recipient: Williams, A.C.
Date: 11/05/9

& Document #: 5697
Title: Review of Draft RI/FS for the TAN Groundwater Operable Unit 1-07B
Author: Liverman, E.
Recipient: Green, L.
Date: 01/12/94

& Document #: 5682
Title: Resolution of EPA's Comments on TAN OU 1-07B Draft Final RI/FS
Author: Pierre, W.
Recipient: Lyle, J.L.
Date: 01/26/94

& Document #: 5698
Title: Review of Draft Proposed Plan for the Test Area North Groundwater Operable Unit 1-07B
Author: Liverman, E.
Recipient: Harelson, D.B.; English, M.
Date: 03/28/94

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FILE NUMBER

AR12.2 IDHW COMMENTS

& Document #: 5340
Title: Review of the Draft Remedial Investigation Report for Operable Unit (OU) 1-07B
Author: English, M.
Recipient: Green, L.
Date: 07/02/93

& Document #: 5574
Title: Review of the Draft Remedial Investigation/Feasibility Study for Operable Unit 1-07B
Author: English, M.
Recipient: Williams, A.C.
Date: 10/29/93

& Document #: 5683
Title: Review of the Draft Proposed Plan Operable Unit (OU) 1-07B
Author: English, M.
Recipient: Green, L.
Date: 03/14/94

& Document #: 5699
Title: Review of the Draft Final Remedial Investigation Feasibility Study (RI/FS) for Operable Unit (OU) 1-07B
Author: English, M.
Recipient: Green L.
Date: 01/11/94

& Document #: 5684
Title: TAN OU 1-07B Draft RI/FS Report
Author: English, M.
Recipient: Lyle, J.L.; Pierre, W.
Date: 01/28/94

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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FILE NUMBER

AR1.7 INITIAL ASSESSMENTS

& Document #: 2235
Title: TSF-22, Initial Assessment for the TSF Railroad Turntable
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 07/06/87

& Document #: 2698
Title: TSF-28, Initial Assessment for the TSF Sewage Treatment Plant (TAN-623) and Sludge Dry Beds
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2627
Title: WRRTF-05, Initial Assessment for the WRRTF Injection Well
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 10/08/86

AR2.1 SAMPLING AND ANALYSIS PLAN

& Document #: EGG-ER-11345, Rev. 0
Title: Sampling and Analysis Plan for the Removal Action at TAN OU 1-08, TSF Mercury Spill Sites 13B and 13C at the INEL
Author: Jorgenson-Waters, M.J.; Sherwood, J.A.
Recipient: N/A
Date: 07/01/94

& Document #: INEL-95/0204, Rev. 1
Title: Sampling and Analysis Plan for the Removal Action at Test Area North OU 1-08, TSF-08 Mercury Spill Sites 13B and 13C at the Idaho National Engineering Laboratory
Author: Jorgenson-Waters, M.J.; Sherwood, J.A.
Recipient: N/A
Date: 04/01/95

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FILE NUMBER

AR2.1 SAMPLING AND ANALYSIS PLAN (continued)

& Document #: INEL-95/0222, Rev. 1
Title: Sampling and Analysis Plan for Retorted Mercury-Contaminated Waste from the Central Facilities Area 674 Pond and Test Area North Mercury Spill Site at the Idaho National Engineering Laboratory
Author: Jorgenson-Waters, M.J.; Sherwood, J.A.
Recipient: N/A
Date: 10/01/95

AR2.5 ACTION MEMORANDUM

& Document #: 5793
Title: Lead Agency Action Memorandum Removal Action for TSF-08, Mercury Spill Sites 13B and 13C at the INEL
Author: Sherwood, J.A.
Recipient: N/A
Date: 10/01/94

AR2.8 WORK PLAN

& Document #: EGG-ER-11404, Rev. 0
Title: Removal Action Project Plan for TAN OU 1-08 TSF-08 Mercury Spill Sites 13B and 13C at the INEL
Author: Sherwood, J.A.
Recipient: N/A
Date: 07/01/94

AR2.10 HAZARD CLASSIFICATION

& Document #: EGG-ER-11315
Title: Hazard Classification for Mercury Removal Action at the TAN Mercury Spill Sites 13B and 13C
Author: Klassy, C.E.
Recipient: N/A
Date: 06/01/94

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FILE NUMBER

AR3.5 RACK 1 INVESTIGATION

& Document #: 5731
Title: Track 1 Investigation of the TSF HTRE Mercury Spill Area - Perform Removal Action and Re-evaluate in WAG Wide RI/FS
Author: Lyle, J.; Pierre W.; Nygard, D.
Recipient: Not specified
Date: 07/25/94

AR3.14 TRACK 2 SUMMARY REPORT

& Document #: INEL-94/0170, through Appendix B
Title: Preliminary Scoping Track 2 Summary Report for Operable Unit 1-08
Author: Not specified
Recipient: Not specified
Date: 09/01/95

ADMINISTRATIVE RECORD BINDER II

& Document #: INEL-94/0170, Appendix C through I
Title: Preliminary Scoping Track 2 Summary Report for Operable Unit 1-08
Author: Not specified
Recipient: Not specified
Date: 09/01/95

AR3.22 TRACK 2 DECISION STATEMENT

& Document #: 10286
Title: Track 2 Decision Statement for Operable Unit (OU) 1-08 Miscellaneous Contamination Sites April, 1996
Author: DOE-ID; EPA; IDHW
Recipient: N/A
Date: 05/16/96

AR10.3 PUBLIC NOTICE

& Document #: 5792
Title: Public Comment Period: October 5 to November 5, 1994 On Removal Actions at the INEL
Author: INEL Community Relations
Recipient: N/A
Date: 10/01/94

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TRACK 2 INVESTIGATION OF OU 1-08
08/06/99

FILE NUMBER

AR12.1 EPA COMMENTS

& Document #: 5710
Title: Draft Track Two Field Sampling Plan for OU 1-08: Test Area North
Author: Liverman, E.
Recipient: Green, L.
Date: 05/23/94

AR12.2 IDHW COMMENTS

& Document #: 5706
Title: Review of the Draft Track Two Sampling and Analysis Plan for Operable Unit 1-08
Author: English, M.
Recipient: Green, L.
Date: 05/23/94

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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FILE NUMBER

AR1.1 BACKGROUND

& Document #: INEL-95/0065
Title: Summary Report for Removal of the TAN-603 French Drain (TSF-36)
Author: Burns. D. E.; Ramos, A. G.
Recipient: Not Specified
Date: 04/24/95

AR1.7 INITIAL ASSESSMENTS

& Document #: 2624
Title: WRRTF-02, Initial Assessment for the WRRTF Two Phase Pond
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2625
Title: WRRTF-03, Initial Assessment for the WRRTF Evaporation Pond
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/23/86

& Document #: 2628
Title: WRRTF-06, Initial Assessment for the WRRTF Sewage Lagoon
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2630
Title: WRRTF-07, Initial Assessment for the WRRTF Septic Tank & Sandfilters
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR3.5 TRACK 1 INVESTIGATIONS

& Document #: 5295
Title: WRRTF-02, WRRTF Evaporation Pond (TAN-763), No Further Action
Author: N/A
Recipient: N/A
Date: 06/23/93

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12/08/99

FILE NUMBER

AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 5559
Title: WRRTF-06, WRRTF Sewage Lagoon, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5566
Title: TSF-37, Contaminated Well Water Spill, Continued to Track 2
Author: N/A
Recipient: N/A
Date: 09/24/93

& Document #: 5589
Title: TSF-36, TAN-603 French Drain, No Further Action Determination
Author: N/A
Recipient: N/A
Date: 12/01/93

& Document #: 5659
Title: WRRTF-03, Evaporation Pond (TAN-762), No Further Action
Author: N/A
Recipient: N/A
Date: 04/01/94

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 5716*
Title: Public Meeting in Idaho Falls, Idaho on the Proposed Plan for the TAN Groundwater Contamination
Author: Schwartz, N.
Recipient: N/A
Date: 06/06/94

& Document #: 5717*
Title: Public Meeting in Boise, Idaho on the Proposed Plan for the TAN Groundwater Contamination
Author: Graham, D.
Recipient: N/A
Date: 06/08/94

NOTE: *The Public Meeting Transcripts can be found in Administrative Record Binder 1-07B, Volume V.

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12/08/99

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AR10.4 PUBLIC MEETING TRANSCRIPTS (continued)

& Document #: 5718*
Title: Public Meeting in Moscow on the Proposed Plan for the TAN Groundwater Contamination
Author: Graham D.
Recipient: N/A
Date: 06/09/94

NOTE: *The Public Meeting Transcripts can be found in Administrative Record Binder 1-07B, Volume V.

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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INCLUDING: TSF PAIN SHOP FLOOR DRAIN LEACH FIELD OU 1-10
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ADMINISTRATIVE RECORD BINDER I
FILE NUMBER

AR1.1 BACKGROUND

& Document #: 10562
Title: Summary Report for OU 10-06 Rad Soils Removal
Author: Cotten, G.B.
Recipient: Haney, T.J.
Date: 12/02/96

& Document #: 10802
Title: Index of Sample Documents for WAG-1
Author: Not Specified
Recipient: Not Specified
Date: 11/18/99

AR1.7 INITIAL ASSESSMENTS

& Document #: 2697
Title: TSF-27, Drain Leach Field (W. of TAN-636)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

AR1.9 NEW SITE IDENTIFICATION/INCLUSION

& Document #: 10547
Title: New Site Identification - TAN 616 Building
Author: DOE; EPA; IDHW
Recipient: Not specified
Date: 10/19/98

AR3.3 WORK PLAN

& Document #: DOE/ID-10527, through Attachment I
Title: Work Plan for Waste Area Group 1 Operable Unit 1-10 Comprehensive Remedial Investigation/Feasibility Study
Author: Lewis, S.M.; Michael, D.L.; Theye, J.K.; Troutman, R.E.; Coberley, D.M.; Townsend, P.H.
Recipient: Not specified
Date: 03/01/96

ADMINISTRATIVE RECORD BINDER II
FILE NUMBER

AR3.3 WORK PLAN (continued)

& Document #: DOE/ID-10527, Attachment II through Attachment IX
Title: Work Plan for Waste Area Group 1 Operable Unit 1-10 Comprehensive Remedial Investigation/Feasibility Study
Author: Lewis, S.M.; Michael, D.L.; Theye, J.K.; Troutman, R.E.; Coberley, D.M.; Townsend, P.H.
Recipient: Not specified
Date: 03/01/96

ADMINISTRATIVE RECORD BINDER III

AR3.5 TRACK 1 INVESTIGATIONS

& Document #: 5736
Title: TSF-27 TSF Paint Shop Floor Drain Leach Field (W. of TAN-636) - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 07/27/94

& Document #: 10029
Title: LOFT-12 LOFT XFMR Yard #2 PCB Spill - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 06/23/95

& Document #: 10272
Title: TSF-44 TSF Diesel Fuel Pipeline Leak - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 03/22/96

& Document #: 10281
Title: TSF-45 Atomic Energy Commission (AEC) Burial Pit - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/15/96

FILE NUMBER

AR3.5 TRACK 1 INVESTIGATIONS (continued)

& Document #: 10282
Title: LOFT-16 Landfill on NE Side of the LOFT-02 Disposal Pond Berm - No Further Action Determination
Author: N/A
Recipient: N/A
Date: 05/15/96

AR3.10 SCOPE OF WORK

& Document#: INEL-95/0165
Title: Scope of Work for Operable Unit 1-10 WAG 1 Comprehensive Remedial Investigation/Feasibility Study
Author: Michael, D.L.
Recipient: N/A
Date: 10/01/95

AR3.11 FIELD SAMPLING

& Document #: INEL-95/0304, Rev. 0
Title: Field Sampling Plan for Operable Unit 1-10: Test Area North
Author: Michael, D.L.
Recipient: N/A
Date: 03/01/96

ADMINISTRATIVE RECORD BINDER IV

AR3.12 RI/FS REPORTS

& Document #: OPE-ER-99-97
Title: Transmittal of the Draft Comprehensive Remedial Investigation/Feasibility Study for the Test Area North Operable Unit 1-10
Author: Jensen, N.R.
Recipient: Pierre, W.; Nygard, D.
Date: 06/16/97

& Document #: DOE/ID-10557, Rev. 0
Title: Remedial Investigation/Feasibility Study for the Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory
Author: Blackmore, C.S.; Burns, D.E., Green, T.S.; Lewis, S.M.; Michael, D.L.; Stepan, I.E.
Recipient: Not specified
Date: 11/01/97

FILE NUMBER

AR3.12 RI/FS REPORTS (continued)

& Document #: TES-3-97
Title: Supplement to DOE/ID-10557, Changes to Appendix J (Cost Estimates) of the Comprehensive RI/TS for the TAN OU 1-10 at the INEEL
Author: Sivill, T. E.
Recipient: Green, T. S.
Date: 09/08/97

ADMINISTRATIVE RECORD BINDER V

& Document #: DOE/ID-10557, Supplement
Title: Comprehensive Remedial Investigation and Feasibility Study Supplement for the Test Area North Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory
Author: Kuhns, D.J.
Recipient: Not specified
Date: 11/01/98

AR3.15 HEALTH AND SAFETY PLAN

& Document #: INEL-95/0333, Rev. 3
Title: Health and Safety Plan for the Operable Unit 1-10 WAG 1 Comprehensive Remedial Investigation/Feasibility Study
Author: Blackmore, C.S.; Flynn, S.C.; Gurney, L.W.
Recipient: Not specified
Date: 06/01/98

AR3.17 REMEDIAL INVESTIGATION AND BASELINE RISK ASSESSMENT REPORT

& Document #: OPE-ER-15-97
Title: Transmittal of the Comprehensive Remedial Investigation/Baseline Risk Assessment for the Test Area North Operable Unit 1-10
Author: Jensen, N.R.
Recipient: Pierre, W.; Nygard, D.
Date: 02/13/97

AR3.20 TREATABILITY STUDY

& Document #: INEEL/EXT-98-00739
Title: Final Report Treatability Study for LMITCO TSF-09 V-1, V-2, and V-3 Tank Waste
Author: Richardson, C.; Withers, W.; Larson, G.; Hour, K.
Recipient: Not specified
Date: 09/01/98

FILE NUMBER

AR3.20 TREATABILITY STUDY (continued)

& Document #: INEEL/EXT-98-00854
Title: Treatability Study for Planar In Situ Vitrification of INEEL Test Area North V-Tanks
Author: Michael, D.
Recipient: Not specified
Date: 10/01/98

AR3.21 SCHEDULE

& Document #: OPE-ER-286-97
Title: Regulatory Status of Test Area North V-Tanks and the OU 1-10 Proposed Plan Schedule
Author: Hain, K.E.
Recipient: Pierre, W.; Nygard, D.
Date: 12/18/97

AR4.2 FS REPORT

& Document #: OPE-ER-157-07
Title: Transmittal of Draft Final Feasibility Study for Test Area North Operable Unit 1-10
Author: Hain, K.E.
Recipient: Pierre, W.; Nygard, D.
Date: 10/06/97

& Document #: OPE-ER- 184-97
Title: Transmittal of Final Feasibility Study for OU 1-10
Author: Hain, K.E.
Recipient: Pierre, W.; Nygard, D.
Date: 11/06/97

AR4.3 PROPOSED PLAN

& Document #: OPE-ER-159-97
Title: Transmittal of Draft Proposed Plan for Test Area North Operable Unit 1-10
Author: Hain, K.E.
Recipient: Pierre, W.; Nygard, D.
Date: 10/07/97

& Document #: 10443
Title: Proposed Plan for Waste Area Group -Test Area North Operable Unit 1-10
Author: INEEL Community Relations
Recipient: Not specified
Date: 02/01/98

FILE NUMBER

AR4.3 PROPOSED PLAN (continued)

& Document #: 10553
Title: Proposed Plan for Waste Area Group -Test Area North Idaho National Engineering and Environmental Laboratory
Author: INEEL Community Relations
Recipient: Not specified
Date: 11/01/98

AR4.4 SUPPLEMENTS AND REVISION TO THE PROPOSED PLAN

& Document #: 10555
Title: Cost Estimates for Containment Alternatives for Waste Area Group 1 Operable Unit 1-10 Sites
Author: Kuhns, D.J.
Recipient: Hain, K.E.
Date: 11/11/98

AR5.1 RECORD OF DECISION AND SUPPORTING DOCUMENTATION

& Document #: OPE-ER-75-99
Title: Transmittal of the Draft Record of Decision for the Test Area North Operable Unit (OU) 1-10 Comprehensive Remedial Investigation and Feasibility Study (RI/FS) at the Idaho National Engineering and Environmental Laboratory
Author: Hain, K.E.
Recipient: Pierre, W.; Nygard, D.
Date: 05/24/99

& Document #: TES-05-99
Title: WAG 1 OU 1-10 Site V9/18 Draft ROD Cost Estimate
Author: Sivill, T. E.
Recipient: Kuhns, D. J.
Date: 07/26/99

& Document #: TES-06-99
Title: WAG 1 OU 1-10 Site V9/18 Draft ROD Cost Estimate
Author: Sivill, T. E.
Recipient: Kuhns, D. J.
Date: 07/26/99

& Document #: TES-07-99
Title: WAG 1 OU 1-10 Institutional Control Sites Cost Estimate
Author: Sivill, T. E.
Recipient: Kuhns, D. J.
Date: 0826/99

FILE NUMBER

AR5.1 RECORD OF DECISION AND SUPPORTING DOCUMENTATION (continued)

& Document #: JDF-26-99
Title: Cost Estimate **S** TAN OU 1-10 Comprehensive Economy of Scale
Author: Folker, J. D,
Recipient: Reese, C. L.
Date: 09/23/99

& Document #: JDF-27-99
Title: Cost Estimate **S** TAN OU 1-10 Investigation Derived Waste
Author: Folker, J. D.
Recipient: Reese, C. L
Date: 09/23/99

AR10.4 PUBLIC MEETING TRANSCRIPTS

& Document #: 10814
Title: Public Meeting Transcript for TAN Comprehensive RI/FS Proposed Plan Held February 24, 1998, at Boise, Idaho
Author: Schwartz, N.
Recipient: Not specified
Date: 11/18/99

& Document #: 10815
Title: Public Meeting Transcript for TAN Comprehensive RI/FS Proposed Plan Held February 26, 1998, at Moscow, Idaho
Author: Schwartz, N.
Recipient: Not specified
Date: 11/18/99

& Document #: 10816
Title: Public Meeting Transcript for TAN Comprehensive RI/FS Proposed Plan Held February 23, 1998, at Idaho Falls, Idaho
Author: Schwartz, N.
Recipient: Not specified
Date: 11/18/99

AR10.6 FACT SHEETS AND PRESS RELEASES

& Document #: 10552
Title: Update Fact Sheet - Test Area North Revised Proposed Plan to be Issued in Early November
Author: INEEL Community Relations
Recipient: Not specified
Date: 11/01/98

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12/09/99

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AR12.3 DOE RESPONSE TO COMMENTS

& Document #: OPE-ER-125-99
Title: Transmittal of the Draft Final OU 1-10 Record of Decision for Test Area North Operable Unit 1-10 Comprehensive Remedial Investigation/Feasibility Study at the Idaho National Engineering and Environmental (Comment Resolution)
Author: Hain, K. E.
Recipient: Pierre, W.; Nygard, D.
Date: 09/07/99

& Document #: OPE-ER-165-99
Title: Transmittal of Final OU 1-10 Record of Decision for Test Area North Operable Unit 1-10 Comprehensive Remedial Investigation/Feasibility Study at the Idaho National Engineering and Environmental (Comment Resolution)
Author: Hain, K. E.
Recipient: Pierre, W.; Nygard, D.
Date: 10/25/99

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.

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08/06/99

FILE NUMBER

AR1.6 NO-ACTION SITES

& Document #: 5109
Title: IET-02 Burial Pit NE of IET, Rev. 1
Author: Hsu, D.
Recipient: N/A
Date: 01/20/92

& Document #: 5110
Title: IET-08 Septic Tank (TAN-710) and Filter Bed
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 5111
Title: LOFT-04 Injection Well (TAN-333)
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/29/92

& Document #: 5158
Title: LOFT-09 Septic Tank and Drainfield System (TAN-762)
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/24/92

& Document #: 5157
Title: LOFT-13 Dry Well (TAN-333)
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/20/92

& Document #: 5151
Title: TSF-16 Brine Pit North of TAN 608
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

& Document #: 5150
Title: TSF-30 TSF Septic Tank East of TAN-602
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/29/92

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AR1.6 NO-ACTION SITES (continued)

& Document #: 5152
Title: TSF-34 Fuel Tank 607S
Author: Zimmerle, J.R.
Recipient: N/A
Date: 05/15/92

& Document #: 5153
Title: TSF-40 Rubble Piles Southwest of WRRTF
Author: Zimmerle, J.R.
Recipient: N/A
Date: 05/15/92

& Document #: 5154
Title: TSF-41 Scrap Yard South
Author: Zimmerle, J.R.
Recipient: N/A
Date: 05/15/92

& Document #: 5205
Title: SMC-01 Septic Tank and Drain Field (North of TAN-629)
Author: Zimmerle, J.R.
Recipient: N/A
Date: 08/05/92

& Document #: 5160
Title: WRRTF-07 Septic Tank and Sand Filters (TAN-737)
Author: Zimmerle, J.R.
Recipient: N/A
Date: 01/08/92

AR1.7 INITIAL ASSESSMENTS

& Document #: 2238
Title: IET-02, Initial Assessment for the IET Burial Pit NE of IET 2 Investigation
Author: Alexander, T.G.
Recipient: Clark, C.
Date: 01/12/88

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AR1.7 INITIAL ASSESSMENTS (continued)

& Document #: 2612
Title: IET-08, Initial Assessment for the IET Septic Tank (TAN-710) and Filter Bed
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2753
Title: LOFT-04, Initial Assessment for the LOFT Injection Well (TAN-733)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/25/86

& Document #: 2758
Title: LOFT-09, Initial Assessment for the LOFT Septic Tank & Drainfield, (TAN-762)
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2761
Title: LOFT-13, Initial Assessment for the LOFT Dry Well (TAN-733)
Author: Saint-Louis, M.L.
Recipient: Clark, C,
Date: 09/24/86

& Document #: 2727
Title: TSF-16, Initial Assessment for the TSF Brine Pit N of TAN-608
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

& Document #: 2700
Title: TSF-30, Initial Assessment for the TSF Septic Tank E of TAN-602
Author: Saint-Louis, M.L.
Recipient: Clark, C.
Date: 09/24/86

NOTE: Sampling data can be examined at the Technical Support Building, 1580 Sawtelle.